60459360

CONTROL DATA
CORPORATION

NOS VERSION 2 APPLICATIONS PROGRAMMER'S INSTANT

CDC® COMPUTER SYSTEMS:
CYBER 170
CYBER 70
MODELS 71, 72, 73, 74
6000

REVISION RECORD

Revision	Description
A (07-26-82)	Manual released. This manual reflects NOS 2.0 at PSR level 562.

Publication No.
60459360

Revision letters I, O, Q, S, X, and Z are not used.

Address comments to:

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Publications and Graphics Division
4201 North Lexington Avenue
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LIST OF EFFECTIVE PAGES

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PREFACE

The Network Operating System (NOS) Version 2.0 provides network capabilities for interactive and transaction processing, in addition to local and remote batch processing on CONTROL·DATA® CYBER 170 Computer Systems; CDC® CYBER 70 Computer Systems Models 71, 72, 73, and 74; and CDC 6000 Computer Systems.

AUDIENCE

This instant is designed for users familiar with NOS. It is intended to serve as a quick reference tool for you, not as a stand-alone document.

ORGANIZATION

This instant provides condensed descriptions of system commands; control language formats; and loader, product set, and system utility command formats. Character set tables are also provided.

For condensed descriptions of console commands, system-oriented commands, central memory tables, and function requests, refer to the NOS 2 Systems Programmer´s Instant.

CONVENTIONS

EXTENDED MEMORY

Extended memory for the CYBER 170 Model 176 is large central memory (LCM) or large central memory extended (LCME). Extended memory for the CYBER 170 Models 825, 835, and 855 is unified extended memory (UEM). Extended memory for all other NOS computer systems is extended core storage (ECS) or extended semiconductor memory (ESM).

In this manual, the term extended memory refers to all forms of extended memory unless otherwise noted. However, in the context of a multimainframe environment or distributive data path (DDP) access, models 176, 825, 835, and 855 are excluded.

Programming information for the various forms of extended memory can be found in the COMPASS Version 3 Reference Manual and in the appropriate computer system hardware reference manual.

CONTROL STATEMENT

The manuals for many NOS products use the term control statement instead of the term command. This manual uses the term command exclusively. You can consider the two synonymous.

RELATED PUBLICATIONS

The following manuals provide detailed descriptions of these subjects.

Control Data Publication	Publication Number
ALGOL Version 5 Reference Manual	60481600
APL Version 2 Reference Manual	60454000
BASIC Version 3 Reference Manual	19983900
COBOL Version 5 Instant	60497000
COBOL Version 5 Reference Manual	60497100
COMPASS Version 3 Reference Manual	60492600
CYBER Interactive Debug Reference Manual	60481400
CYBER Loader Instant	60449800
CYBER Loader Reference Manual	60429800
FORTRAN Extended Version 4 Reference Manual	60497800
FORTRAN Extended Version 4 Instant	60497900
FORTRAN Version 4 to 5 Conversion Aids Reference Manual	60483000
FORTRAN Version 5 Reference Manual	60481300
Modify Instant	60450200
Modify Reference Manual	60450100
Network Terminal User's Instant	60459380
NOS Manual Abstract	60485500
NOS Version 2 Diagnostic Index	60459390
NOS Version 2 Reference Set, Volume 3, System Commands	60459680
NOS Version 2 Systems Programmer's Instant	60459370
PL/I Version 1 Reference Manual	60388100
Sort/Merge Reference Manual	60497500
Sort/Merge Version 5 Reference Manual	60484800
Text Editor Reference Manual	60436100
Update Instant	60450000
Update Reference Manual	60449900
XEDIT Version 3 Reference Manual	60455730

DISCLAIMER

This manual is intended only as a quick reference document. Product should only be used as described in applicable manuals. Control Data cannot be responsible for the proper functioning of undescribed features or undefined parameters.

CONTENTS

FIGURES

TABLES

SYSTEM COMMAND FORMATS

1

PERMANENT FILE OPTIONS

The following parameters and descriptions are options on various permanent file commands.

Parameter	Description	
BR=br	Backup requirements. Specifies whether file data should be backed up on a dump tape.	
	br	Meaning
	MD	A tape backup is kept only if a copy of the file does not exist on MSF.
	N	A tape backup copy is not kept.
	Y	A tape backup copy is kept.
CE	Clears file error status.	
CT=ct	Specifies category of permission for alternate users. If omitted when file is created, file is private.	
	ct	Meaning
	P or PR or PRIVATE	Private files available for access only by originator or those with explicit permission.
	S or SPRIV	Semiprivate files available for access by any user who knows file name, user name, and password and whose permitted mode of access to the file is not NULL.
	PU or PUBLIC	Public files available for access by all users who know file name, user name, and password.
M=m	Specifies file or user permission mode.	

Parameter	Description	
	m	Meaning
	W or WRITE	Allows you to write, read, append, execute, modify, or purge file.
	M or MODIFY	Allows you to rewrite append, read, or execute direct access file.
	A or APPEND	Allows you to read, execute, or append information to end of file.
	R or READ	Allows you to read or execute file.
	RM or READMD	Allows you to read or execute direct access file while another user is accessing file in modify mode.
	RA or READAP	Allows you to read or execute a direct access file while another user is accessing file in append mode.
	E or EXECUTE	Allows you to execute file.
	N or NULL	Removes permission previously granted with PERMIT command.
NA	Specifies no abort, even if error is encountered. If NA is specified on ATTACH, suspends job until currently unavailable resource becomes available.	
PN=packname	Specifies one- to seven-character pack name used in conjunction with R keyword to identify device to be accessed in permanent file request.	
PR=pr	Preferred residence. Specifies whether the user prefers that the file resides on MSF.	
	pr	Meaning
	M	Preferred residence is MSF when file is not being used.
	N	Preferred residence is not specified.

Parameter	Description
PW=password or PW	Specifies one- to seven-character password that must be specified whenever alternate users access file. If second form is used, password is read from single-line record in INPUT file containing only password.
R=r[†]	Specifies type of device on which permanent file resides or is to reside.

r	Meaning
DE	Extended memory.
DIi	844-21 Disk Storage Subsystem (half-track) ($1 \le i \le 8$).
DJi	844-4x Disk Storage Subsystem (half-track) ($1 \le i \le 8$, x=1 or 4).
DKi	844-21 Disk Storage Subsystem (full-track) ($1 \le i \le 8$).
DLi	844-4x Disk Storage Subsystem (full-track) ($1 \le i \le 8$, x=1 or 4).
DMi	885 Disk Storage Subsystem (half-track) ($1 \le i \le 3$).
DP	Distributive data path.
DQi	885 Disk Storage Subsystem (full-track) ($1 \le i \le 3$).
DV	819 Disk Storage Subsystem (single-density).
DW	819 Disk Storage Subsystem (double-density).

Parameter	Description
RT	Real time. Specifies job will not wait for file to be attached if file data is to be staged to disk from alternate storage or if utility interlock prevents ATTACH processing. System considers ATTACH command complete and initiates file data staging to disk, if required.

[†] Files that become Mass Storage Facility (MSF) resident and then are staged back to disk might not reside on the device type specified by the R=r parameters.

Parameter	Description
S=space	Specifies amount of space in PRUs desired for direct access file.
SS=subsyst or SS	Specifies subsystem to be associated with file.

Subsystem	Meaning
NULL	NULL subsystem.
BASIC	BASIC subsystem.
FTNTS	FORTRAN Extended Version 4 subsystem.
FORTRAN	FORTRAN Version 5 subsystem.
EXECUTE	EXECUTE subsystem.
BATCH	BATCH subsystem.

If only SS is specified, the current subsystem is associated with the file.

Parameter	Description
UN=username	Specifies alternate user name for file residing in another user's catalog.
WB	Specifies wait-if-busy option. Job will wait for removable pack to be mounted or a busy file to be returned.

TAPE MANAGEMENT OPTIONS

The following parameters and keywords may appear on various tape management commands.

Parameter	Description
CB	Specifies that lfn is to be used as checkpoint file with information written at BOI.
CK	Specifies that lfn is to be used as checkpoint file with information written at previous EOI.
CR=yyddd	Specifies creation date where ddd is nth day of the year yy.

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td>CV=cv
or
N=cv</td><td>Specifies conversion mode for nine-track tapes.
<table>
<tr><th>cv</th><th>Meaning</th></tr>
<tr><td>AS</td><td>ASCII/display code conversion.</td></tr>
<tr><td>US</td><td>Same as AS.</td></tr>
<tr><td>EB</td><td>EBCDIC/display code conversion.</td></tr>
</table></td></tr>
<tr><td>D=den</td><td>Specifies tape density.
<table>
<tr><th>den</th><th>Meaning</th></tr>
<tr><td>LO or 200</td><td>200 characters per inch (cpi) (seven-track).</td></tr>
<tr><td>HI or 556</td><td>556 cpi (seven-track).</td></tr>
<tr><td>HY or 800</td><td>800 cpi (seven-track).</td></tr>
<tr><td>HD or 800</td><td>800 cpi (nine-track).</td></tr>
<tr><td>PE or 1600</td><td>1600 cpi (nine-track).</td></tr>
<tr><td>GE or 6250</td><td>6250 cpi (nine-track).</td></tr>
</table>
Keywords LO, HI, HY, HD, PE, and GE may be specified instead of D=den on REQUEST and ASSIGN commands.</td></tr>
<tr><td>E=gvn</td><td>Specifies one- to two-digit generation version number.</td></tr>
<tr><td>F=format</td><td>Specifies data format.
<table>
<tr><th>format</th><th>Meaning</th></tr>
<tr><td>I</td><td>Internal.</td></tr>
<tr><td>S</td><td>Stranger tape.</td></tr>
<tr><td>L</td><td>Long block stranger tape.</td></tr>
<tr><td>SI</td><td>System internal.</td></tr>
<tr><td>F</td><td>Foreign.</td></tr>
</table></td></tr>
</table>

Parameter	Description
FA=fa	Specifies file accessibility character. If FA=A, only owner of tape can access file. For other fa, all future accesses must specify character as fa parameter. If omitted, unlimited access implied.
FC=fcount or C=ccount	Specifies maximum block size in frames that may be read or written.
FI=fileid or L=fileid	Specifies 1- to 17-character file identifier.
G=genno	Specifies one- to four-digit generation number.
L=out	Specifies file on which labels are to be listed.
LB=lb	Specifies whether tape is to be treated as labeled or unlabeled. If omitted, assume LB=KL when VSN is specified and LB=KU if VSN is omitted.

lb	Meaning
KU	Unlabeled.
KL	ANSI labeled.
NS	Nonstandard labels.

LO=ltype	Specifies type of labels to list.

ltype	Meaning
A	Lists all required and optional ANSI labels.
R	Lists all required labels.
O	Lists all optional labels.
V	Lists all VOL1-9 labels.
H	Lists all HDR1 labels.
F	Lists all EOF1-9 labels.
E	Lists all EOV1-9 labels.
U	Lists all UVL1-9 UHL1-9, and UTL1-9 labels.

Parameter	Description
LSL=lsl	Specifies label standard level. If LSL=1, labels and data format are ANSI standard. If omitted, indicates that format requires agreement of interchange parties.
NS=ns	Noise size.
MT	Specifies seven-track tape.
NT	Specifies nine-track tape.
OFA=ofa	Specifies current file accessibility character of labeled tape that is to be blank labeled (refer to FA parameter description for explanation of fa).
OWNER= username/ familyname	Identifies owner of labeled tape.
PO=$p_1,p_2,\ldots,p_n$	Specifies processing options.

p_i	Meaning
A	Abort job on irrecoverable read or write parity error.
E	Ignore all hardware read/write errors; processing continues.
F	Force unload.
G	Disable hardware error correction on write operations (effective for 6250-cpi density only).
H	Enable hardware error correction on write operations (effective for 6250-cpi density only).
I	Rewrites the block on which EOT occurred as the first block on the next volume if EOT sensed during write. Ignores block being read when EOT is encountered; illegal option for internal (I, SI) formats.

Parameter	Description	
	P_i	Meaning
	L	Disable issuing of tape error recovery messages to job´s dayfile; only first and last error messages are issued.
	M	Enable issuing of all tape error recovery messages to job´s dayfile.
	N	Do not abort job on irrecoverable read or write parity error.
	P	Writes a trailer sequence following the block on which EOT was sensed during write operation. Accepts block being read when EOT is encountered; illegal option for internal (I, SI) formats.
	R	Enforce ring out.
	S	Specify where system is to stop when EOT is encountered. For unlabeled tapes, stop at first tape mark after EOT, and for labeled tapes, stop at tape mark plus EOF1 or EOV1.
	U	Inhibit unload.
	W	Enforce ring in.

QN=seqno
or
P=seqno
	Specifies one- to four-digit file sequence number.	

R	Directs system to read existing ANSI label.	
RT=yyddd	Specifies retention date where ddd is nth day of the year yy.	

SI=setid
or
M=setid
	Specifies one- to six-character set identifier for multifile set.	

SN=secno
or
V=secno
	Specifies one- to four-digit file section number.	

Parameter	Description
T=ddd	Specifies one- to three-digit retention cycle, indicating number of days file is to be retained.
U	Unloads tape after blank labeling.
VA=va	Specifies volume accessibility; one character specifies restrictions on who has access to information on reel.
VSN=vsn$_1$/vsn$_2$=...=vsn$_{n-1}$/vsn$_n$	Specifies one- to six-character volume serial number that uniquely identifies reel of tape.
W	Directs system to write standard ANSI labels.

SYSTEM COMMANDS

ACCESS

Selects access subsystem for communication with other terminals (interactive use only).

ALTER,c$_1$,c$_2$,...,c$_n$,/string$_1$/string$_2$/

Changes character strings within specified lines of edit file (interactive use only).

c$_i$	Lines to be altered.
/string 1/string 2/	Occurrences of string 1 are replaced by string 2.

APPEND,pfn,lfn$_1$,lfn$_2$,...,lfn$_n$/PW=password,
UN=username,PN=packname,R=r,NA,WB.

Copies local files lfn$_1$ through lfn$_n$ to end of indirect access permanent file pfn.[†]

ASCII.

Changes interactive terminal to ASCII mode.

[†] Some parameters of this command are defined under Permanent File Options or Tape Management Options at the beginning of this section.

ASSIGN,nn,lfn,VSN=vsn_1,/vsn_2=...=vsn_{n-1}/vsn_n,$\left\{\begin{matrix}\text{D=den}\\ \text{den}\end{matrix}\right\}$,
$\left\{\begin{matrix}\text{FC=fcount}\\ \text{C=ccount}\end{matrix}\right\}$,CV=cv,$\left\{\begin{matrix}\text{MT}\\ \text{NT}\end{matrix}\right\}$,PO=$\text{p}_1\text{p}_2$,...,pn,
F=format,NS=ns,LB=lb,$\left\{\begin{matrix}\text{CK}\\ \text{CB}\end{matrix}\right\}$.

Assigns file lfn to device or device type specified by nn. Device types are listed under Function and Symbolic Names later in this section.†

ATTACH,lfn_1=pfn_1,lfn_2=pfn_2,...,lfn_n=pfn_n/UN=username,
PW=password,M=m,PN=packname,R=r,NA,RT,WB.

Attaches permanent files pfn_1 through pfn_n as local files lfn_1 through lfn_n for direct access.†

AUTO,nnnnn,iiii

Automatically generates five-digit line numbers (interactive use only).

nnnnn	Beginning line number (default is 00100).
iiii	Increments (default is 10).

BASIC,ccc

Selects BASIC subsystem and executes command ccc (interactive use only).

BATCH,fl

Selects batch subsystem and optionally specifies initial running field length,fl (interactive use only).

BKSP,lfn,n,m.

Backspaces file lfn n logical records (default is one record). m is C for coded mode or B for binary (default is binary).

BLANK,$\left\{\begin{matrix}\text{D=den}\\ \text{den}\end{matrix}\right\}$,$\left\{\begin{matrix}\text{MT}\\ \text{NT}\end{matrix}\right\}$,VSN=vsn,FA=fa,VA=va,OFA=ofa,CV=cv,
OWNER=username/familyname,LSL=lsl,U.

Blank labels a magnetic tape.†

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† Some parameters of this command are defined under Permanent File Options or Tape Management Options at the beginning of this section.

BRIEF

Suppresses full and partial headers. Prevents echoing editing changes to primary file (interactive use only).

BYE,application

Ends session with interactive facility (IAF) and optionally connects you to another application.

Application	Description
MCS	Message control system.
RBF	Remote batch facility.
TAF	Transaction facility.

CATALOG,lfn,N=n,L=fname,T,U,CS,D,R.

Catalogs file lfn.

N=0	Catalogs until empty file is encountered.
N=n	Catalogs n files (default is 1).
N	Catalogs to EOI.
L=fname	Specifies output file.
T	Lists entire text record if record name begins with: APRO CMRDC CMRDECK DDSDC DDSDECK IPRDC IPRDECK LIBDC LIBDECK If T is omitted, text records are not listed. If text record name begins with OVERLAY, first line of record is listed.
U	Catalogs contents of user libraries (ULIB type records).
CS	Suppresses character set list for OPL/OPLC type records.
D	Suppresses comment field and page heading following first 1.
R	Rewinds lfn before and after cataloging.

CATLIST,LO=p,FN=pfn,UN=username,PN=packname,R=r,
L=lfn,NA,DN=dn,WB.

Lists information about your permanent files and permanent files you can access in catalogs of alternate users.

LO=p List options.

p	Meaning
F	Selects listing of pertinent information about each file in your catalog.
FP	Selects listing of permission information recorded for each alternate user of specified file.
0	Selects short list that includes only names of files in your catalog (this value assumed if LO omitted).
P	Selects short list that indicates user names of alternate users who have accessed specified file.

FN=pfn	Selects permanent file name.
L=lfn	Selects output file name. If omitted, OUTPUT is assumed.
DN=dn	Selects device number.

CFO,jsn.data

Allows you to send data to executing job with job sequence name jsn.

CHANGE,nfn_1=ofn_1,...,nfn_n=ofn_n/CT=ct,M=m,
PW=password,PN=packname,R=r,SS=subsystem,
NA,CE,PR=pr,BR=br,WB.

Allows owner of permanent file to alter any of several parameters. If nfn=ofn is specified, file name ofn in owner's catalog is changed to nfn.

Some parameters of this command are defined under Permanent File Options at the beginning of this section.

CHARGE,chargenumber,projectnumber. or
CHARGE,*. or
CHARGE.

Specifies your charge and project numbers for your profile control validation. If second form is used, parameters are read from single-line record in INPUT file in format chargenumber, projectnumber. If third form is used, complete charge processing occurs using default charge information supplied when you were authorized to use the system.

CKP,lfn_1,lfn_2,...,lfn_n.

Directs system to take checkpoint dump; each lfn_i is included in dump.

CLEAR. or
CLEAR,*,lfn_1,lfn_2,...,lfn_n.

Releases all local files except the library directory file ZZZZZLD, the procedure scratch files ZZZZZC0, ZZZZZC1, and ZZZZZC2, or other files with no-auto-drop status. The second format releases all files but those listed.

COMMENT,jsn.comment or
COMMENT.comment or
*comment

Enters comments in system dayfile and dayfile of job with job sequence name jsn (default is current job).

COMMON,lfn_1,lfn_2,...,lfn_n.

Accesses file that was already assigned library file type.

CONVERT,p_1,p_2,...,p_i.

Converts text files to 64-character set.

p_i	Description
P=lfn_1	Reads input from file lfn_1 (default is OLD).

<table>
<tr><th>Pi</th><th>Description</th></tr>
<tr><td>N=lfn_2</td><td>Writes output on file lfn_2 (default is NEW).</td></tr>
<tr><td>RS=n_1</td><td>Specifies maximum record size in characters; $1 \le n_1 \le 500$ (default is 300).</td></tr>
<tr><td>64</td><td>Converts from 63- to 64-character set. Must be specified if TS is omitted, or they can be used together.</td></tr>
<tr><td>TS=t</td><td>Converts old time-sharing record (61-character set) to new interactive record (63-character set) with terminal type t. (May be used with 64 or alone.)
<table>
<tr><th>t</th><th>type</th></tr>
<tr><td>TTY or NAMIAF</td><td>ASCII code with standard print.</td></tr>
<tr><td>COR</td><td>Correspondence code with standard print.</td></tr>
<tr><td>COR-APL</td><td>Correspondence code with APL print.</td></tr>
<tr><td>MEM-APL</td><td>Memorex (ASCII code) 1240 with APL print.</td></tr>
<tr><td>BLK-EDT</td><td>Block transmission (ASCII code) with standard print.</td></tr>
</table></td></tr>
<tr><td>NM</td><td>Converts TS to normal mode (default is ASCII mode) with the following effects:
<table>
<tr><td>^</td><td>If TS is specified, display code 70 (circumflex) is converted to 76. If NM is omitted, conversion is to 7402.</td></tr>
<tr><td>:</td><td>If TS and 64 are specified, display code 63 (colon) is converted to 00. If NM is omitted, conversion is to 7404.</td></tr>
</table></td></tr>
<tr><td>R</td><td>Rewinds input and output files prior to processing.</td></tr>
<tr><td>RC=n_2</td><td>Converts n_2 decimal records (if omitted, n_2=1 assumed).</td></tr>
</table>

COPY,I=lfn$_1$,O=lfn$_2$,V=x,M=c,TC=tc,N=copycnt,BS=bsize,
CC=chrcnt,EL=erlimit,PO=$p_1p_2,\ldots,p_n$,L=lfn$_3$.

Copies lfn$_1$ to lfn$_2$ until EOI is encountered or copy termination condition is satisfied. Parameters are order-independent when specified in the keyword=value format; otherwise, parameters are order-dependent.

I=lfn$_1$	Copy this file (default is INPUT).
O=lfn$_2$	Copy to this file (default is OUTPUT).
V=x	If specified, files are rewound before copy and rewound, verified, and rewound after copy. x can be one to seven alphanumeric characters, but must not be zero.
M=c	M parameter applies to S and L format only.

c	Meaning
C1	Coded mode set on lfn$_1$ only.
C2	Coded mode set on lfn$_2$ only.
any other value	Coded mode set on both files.

TC=tc	Specifies copy termination condition that defines use of copy count specified by the N parameter (default is EOD).

tc	Meaning
F EOF	N parameter defines number of files to copy.
I EOI	N parameter ignored. Copy to EOI.
D EOD	N parameter defines number of double EOFs to copy to.

N=copycnt	Specifies copy count as further defined by termination condition, TC (default is 1).

BS=bsize	Specifies maximum block size for S or L tape (default is 1000_8 for S tape and 2000_8 for L tape).
CC=charcnt	Specifies maximum number of characters per block for S or L tape.
EL=erlimit	Specifies error limit. Maximum numbers of nonfatal errors to allow before abort. EL=U denotes unlimited (default is 0).
PO=$p_1p_2\ldots p_n$	One or more of the following:

p_i	Meaning
E	Processes parity error blocks (default is skip).
D	Deletes noise blocks during copy from mass storage, I, or SI tape to S or L output tape (defaults are blank pad to noise size for coded mode and binary zero pad for binary mode).
R	Allows record splitting during copy from mass storage, I, or SI tape to S or L output tape (default is abort if record that is too large is encountered).
M	Specifies copy operation that eliminates EOFs on lfn_2 (default is to include EOFs).

L=lfn_3	Specifies alternative output file to receive parity error messages (default is OUTPUT).

COPYBF,lfn_1,lfn_2,n,c.

Copies n binary files (default is one file), beginning at current position of lfn_1, to lfn_2 (defaults are lfn_1=INPUT and lfn_2=OUTPUT).

COPYBR,lfn_1,lfn_2,n,c.

Copies n binary records (default is one record), beginning at current position of lfn_1, to lfn_2 (defaults are lfn_1=INPUT and lfn_2=OUTPUT).

COPYCF,lfn$_1$,lfn$_2$,n,fchar,lchar,na.

Copies n coded files (default is one file), beginning at current position of lfn$_1$, to lfn$_2$ (defaults are lfn$_1$=INPUT and lfn$_2$=OUTPUT). Portion of each line image to copy is specified by fchar (first character position) and lchar (last character position). If omitted, fchar is 1 and lchar is 136. If na is specified, job step does not abort if line terminator is missing at EOR.

COPYCR,lfn$_1$,lfn$_2$,n,fchar,lchar,na.

Copies n coded records (default is one record), beginning at current position of lfn$_1$, to lfn$_2$ (defaults are lfn$_1$=INPUT and lfn$_2$=OUTPUT). Portion of each line image to copy is specified by fchar and lchar. If omitted, fchar is 1 and lchar is 136. If na is specified, job step does not abort if line terminator is missing at EOR.

COPYEI,lfn$_1$,lfn$_2$,x,c.

Copies lfn$_1$ (current position to EOI) to lfn$_2$ (defaults are lfn$_1$=INPUT and lfn$_2$=OUTPUT). If x is specified, files are rewound before copy and rewound, verified, and rewound after copy.

COPYL,oldlfn,replfn,newlfn,last,flag.

Copies oldlfn to newlfn (defaults are OLD and NEW), substituting records from replfn (default is LGO) for matching records on oldlfn and using each record of replfn only once. All parameters are optional and order-dependent.

last	Last record on oldlfn to be processed; if not specified, all records on oldlfn are processed.
flag	Processing options (more than one may be specified).

flag	Meaning
R	Rewind oldlfn and newlfn before processing.
A	Append to end of newlfn all replfn records that do not match any on oldlfn.
T	Omit check for matching type of record; check for matching name of record only.
E	Copy oldlfn to EOI.

COPYLM,oldlfn,replfn,newlfn,last,flag.

Same as COPYL except that COPYLM performs multiple replacement; that is, the first matching record encountered on replfn replaces each matching record from oldlfn.

COPYSBF,lfn_1,lfn_2,n,na.

Copies n coded files (default is one file), beginning at current position of lfn_1, to lfn_2, shifting each line image one character to right and adding leading space (defaults are lfn_1=INPUT and lfn_2=OUTPUT). If na is specified, job step does not abort if line terminator is missing at EOR.

COPYX,lfn_1,lfn_2,x,b,c. or
COPYX,lfn_1,lfn_2,type/name,b,c.

Copies logical records from lfn_1 to lfn_2 beginning at current position of lfn_1 and continuing until terminator specified by x or type/name is encountered (defaults are lfn_1=INPUT and lfn_2=OUTPUT). Files are then backspaced according to b parameter.

x Specifies terminator type.

x	Meaning
00	Zero record.
n	n records (default is 1).
name	Record name.

type/name Specifies name as first seven characters of record.

type/ name	Meaning
ABS	Multiple entry point overlay.
CAP	Fast dynamic load capsule.
OPL	Modify OPL deck.
OPLC	Modify OPL common deck.
OPLD	Modify OPL directory.
OVL	CPU overlay.
PP	PP program.

type/ name	Meaning
PPU	PPU program.
PROC	Procedure.
REL	Relocatable CPU program.
TEXT	Unrecognizable as a program.
ULIB	User program library.

b — Specifies backspace control:

b	Meaning
0	No backspace (default).
1	Backspace lfn$_1$.
2	Backspace lfn$_2$.
3	Backspace lfn$_1$ and lfn$_2$.

c — Any alphanumeric, one- to seven-character string that indicates copying to or from S or L format tape should be performed in coded mode.

CSET,c.

Changes an interactive terminal's character set to c where c is ASCII or NORMAL.

CTIME.

Enters accumulated CPU time in job's dayfile.

cD

Detach command detaches interactive job from terminal (interactive use only). c is control character on terminal.

DAYFILE,lfn,string,op,pd,pl,infile. or
DAYFILE,L=lfn,FR=string,OP=op,PD=pd,PL=pl,I=infile.

Writes a dayfile on lfn (default is OUTPUT) according to the following options.

FR=string	Searches for specified character string in dayfile. ($ delimiters are required if characters other than numbers and letters are used.)

OP=op	Specifies search option.

op	Meaning
T	Search time field for string specified by FR.
M	Search message field for string specified by FR.
I	Incremental dump.
F	Full dump.

Default is OP=M if FR is specified or OP=I if output is assigned to an interactive terminal (otherwise, default is OP=F).

PD=pd	Specifies print density (pd) (3, 4, 6, or 8 lines per inch) (default is 6 lines per inch).
PL=pl	Specifies page size; if omitted, page size is determined from print density.

pd	Assumed pl
3	30
4	40
6	60
8	80

I=infile	Uses dayfile on file infile as input (default is dayfile associated with job containing DAYFILE command).

DEFINE,lfn$_1$=pfn$_1$,lfn$_2$=pfn$_2$,...,lfn$_n$=pfn$_n$/PW=password,
CT=ct,M=m,R=r,S=space,PN=packname,NA,PR=pr,BR=br,w

Creates empty direct access permanent file.†

DELETE,c$_1$,c$_2$,...,c$_n$,/string/

Deletes specified lines from sequenced file (interactive use only).

c$_i$	Lines to be deleted.
/string/	Line(s) containing this string will be deleted.

---

† Some parameters of this command are defined in Permanent File Options in this section.

DIAL,jsn,sss

Sends one-line message to another terminal user (in IAF access subsystem only).

jsn	Job sequence name of receiving terminal.
sss	One-line message.

DISPLAY,expression.

Evaluates expression and sends results to job dayfile in both decimal and octal integer form. Refer to listing under Symbolic Names and Functions Used in Expressions later in this section.

DMB,ordinal,xmemory.

Generates a binary dump of job's exchange package, central memory, and extended memory.

ordinal	D is appended to this ordinal to form dump record name on file ZZZZDMB.
xmemory	If zero or omitted, system dumps only the exchange package and central memory. If nonzero whole number, system also dumps extended memory.

DMD,fwa,lwa. or
DMDlwa. or
DMD.

Dumps central memory from first word address to last word address minus 1; output contains display code equivalents. If lwa alone is specified, fwa=0 is assumed. If neither fwa nor lwa is specified, DMD dumps exchange package and 40_8 locations before and after program address in exchange package.

DMDECS,fwa,lwa. or
DMDECS,lwa.

Dumps extended memory from first word address to last word address minus 1; output contains display code equivalents. If lwa alone is specified, fwa=0 is assumed.

DMP,fwa,lwa. or
DMP,lwa. or
DMP.

Dumps central memory from first word address to last word address minus 1. If lwa alone is specified, fwa=0 is assumed. If neither fwa nor lwa is specified, DMP dumps exchange package and 40_8 locations before and after program address in exchange package.

DMPECS,fwa,lwa. or
DMPECS,lwa. or
DMPECS,fwa,lwa,f,lfn.

Dumps extended memory from first word address to last word address minus 1. If lwa alone is specified, fwa=0 is assumed. If print format f and file lfn are specified, dump is output on file lfn and contains display code equivalents. Print format f is included only for compatibility with NOS/BE.

DOCMENT,I=lfn_1,S=lfn_2,L=lfn_3,N=nn,T=type,C=cc,P=pp,
NT,NR,TC.

Extracts external or internal documentation from a file containing suitably formatted source code.

I=lfn_1	Name of file that contains page footing information in following format:

Column	Contents
1	Blank.
2-45	Document title.
46-55	Publication number.
56-60	Revision level.
61-70	Revision date.

S=lfn_2	Name of file containing source statement images.
L=lfn_3	Name of file to receive output.
N=nn	Number of copies.
T=type	Documentation type (INT for internal or EXT for external).
C=cc	Key character for documentation.

P=pp	Number of print lines per page.
NT	Negate table generator.
NR	Source file not rewound.
TC	List of table of contents.

```
DROP,JSN=jsn,DC=q,UJN=ujn.  or
DROP,jsn,q,ujn.
```

Drops your executing or queued job with job sequence name jsn. If both JSN=jsn and UJN=ujn are omitted, all of your jobs with the disposition specified by DC=q are dropped.

JSN=jsn	Specifies job sequence name associated with job.
DC=q	Specifies dispostion of job. Default is EX.

q	Meaning
WT	Queued with wait disposition.
PR	Queued for printing.
PU	Queued for punching.
PL	Queued for plotting
IN	Queued for input.
EX	Executing.
ALL	All.

UJN=ujn	Specifies user job name associated with job. May specify jsn, ujn, or both.

```
DUP,q...r,n,z
```

Duplicates and inserts lines in specified location in edit file (for interactive use only).

q...r	Lines duplicated.
n	Line number after which lines are inserted.
z	Line number increment.

cE

Immediate job status command requests detailed job status report (interactive use only). c is control character on terminal.

ELSE,ls.

Terminates skipping when used in conjunction with IFE, provided label strings match. Initiates skipping if IFE command has not done so (refer to description of IFE command).

ls	Label string; 1 to 10 alphanumeric characters, beginning with alphabetic character.

ENDIF,ls.

Terminates skipping when used in conjunction with IFE, ELSE, or SKIP commands, provided label strings match; otherwise, it is ignored.

ls	Label string; 1 to 10 alphanumeric characters, beginning with alphabetic character.

ENDW,ls.

Terminates the iterative processing of a group of commands when used in conjunction with WHILE command, provided label strings match (refer to WHILE command later in this section).

ls	Label string; 1 to 10 alphanumeric characters, beginning with an alphabetic character.

ENQUIRE,OP=$p_1p_2 \ldots p_n$,FN=lfn_1,O=lfn_2. or
ENQUIRE,$p_1p_2 \ldots p_n$. or
ENQUIRE,JSN=jsn,O=lfn_2. or
ENQUIRE,UJN=ujn,O=lfn_2.

Lists information about your job specified by options (up to seven options can be listed for each ENQUIRE command).

OP=p_i or p_i	Type of information returned (default is A).

p_i	Meaning
A	Causes B, D, R, U, J, L, and F options to be processed.

Pi	Meaning
B	Returns information concerning user identification and priorities.
D	Returns list of resources demanded by your job and resources currently assigned.
F	Returns status of files assigned to your job.
J	Returns contents of control registers, error flag field, and succeeding commands.
L	Returns your loader information.
R	Returns system resources used.
S	Returns SRUs used.
T	Returns accumulated CPU time.
U	Returns initial amount of resources available to you for job step time limit (seconds), job step SRUs, account block SRUs, and remaining resources available for dayfile messages, commands, and mass storage.
JSN=jsn	Returns status of job with job sequence name jsn initiated with SUBMIT, ROUTE, detach, or LDI command.
UJN=ujn	Returns job sequence name, service class, user job name, and current status of job with user job name ujn.
FN=lfn_1	Returns status of file lfn_1.
O=lfn_2	Specifies file to receive output (default is OUTPUT).

ENTER./command_1/command_2/.../command_n

Allows you to enter series of commands on one line in the batch subsystem.

	Specifies any character used to separate individual commands that is not used within any of the commands.
command	Specifies any NOS batch command for which you are validated.

EVICT,lfn_1,lfn_2,...,lfn_n.

Releases file space for lfn_i, but for most files does not release file attachment to job. Tape files and files with write lockout set are returned to system.

EXECUTE,ccc

Selects execute subsystem to use on previously compiled programs (interactive use only).

ccc	Optional command executed.

EXIT.

Indicates where in command record to resume command processing if error is encountered, or where to terminate normal command processing.

FCOPY,P=lfn_1,N=lfn_2,PC=cs_1,NC=cs_2,R.

Converts file from one code format to another code format.

P=lfn_1	Converts file lfn_1 (default is OLD).
N=lfn_2	Writes converted output on file lfn_2 (default is NEW).
PC=cs_1	Specifies character code set of lfn_1 (default value is ASCII; ASCII is 6/12 display code).
NC=cs_2	Specifies character code set of lfn_2 (default value is ASCII8; ASCII8 is 12-bit ASCII code).
R	Rewinds lfn_1 and lfn_2 before and after conversion (default is no rewind).

FORTRAN,ccc

Selects Fortran Version 5 subsystem (interactive use only).

ccc	Optional command executed.

FTNTS,ccc

Selects Fortran Extended Version 4 subsystem (interactive use only).

ccc	Optional command executed.

GET,lfn_1=pfn_1,lfn_2=pfn_2,...,lfn_n=pfn_n/UN=username, PW=password,PN=packname,R=r,NA,WB.

Retrieves copy of indirect access permanent file pfn_i for use as local file lfn_i.†

GO,jsn.

Clears the pause bit of executing job with job sequence name jsn.

GOODBYE,application

Same as BYE command.

GTR,lfn_1,lfn_2,d,NR,S,NA. selection directives

Copies records specified by selection directives from lfn_1 to lfn_2, starting at current EOI of lfn_2 (defaults are lfn_1=OLD and lfn_2=LGO).

d Random access directory option.

d	Meaning
U	No new random access directory (OPCD) is added to lfn_2. If user library record type is specified, the first record of the ULIB is copied to lfn_2.
D or other	Write a random access directory (OPCD) at the end of lfn_2.
omitted	No new random access directory (OPLD) is added to lfn_2. If user library record type is specified, the first record of the ULIB is copied to lfn_2.

---

† Some parameters of this control statement are defined in Permanent File Options in this section.

NR	Specifies that files lfn_1 and lfn_2 are not rewound after operation. If not specified, both files are rewound before and after operation.
S	Processes lfn_1 as sequential file.
NA	Does not abort even if error is encountered.

Selection Directives	Description
type/name	Retrieves record of specified type (refer to COPYX for types) and name.
name	Retrieves record specified.
0	Inserts zero-length record on file lfn_2.
type/ $name_1$ $-name_2$	Retrieves records $name_1$ through $name_2$ of type specified. If $name_1$ is not found, no records are retrieved. If $name_1$ is found, $name_2$ is not found, and NA is specified, all records from $name_1$ to EOF are retrieved.
$type_1$/ $name_1$- $type_2$/ $name_2$	Retrieves records $name_1$ of $type_1$ ending with $name_2$ of $type_2$.
$name_1$- $name_2$	Retrieves records of $name_1$ ending with $name_2$ of default type.
type/ name-*	Retrieves all records of type beginning with named record.
name-*	Retrieves all records of default type beginning with named record.
type/*	Retrieves all records of specified type.

HELLO,application.

Logs you out of IAF and switches you to another application, or reinitiates login sequence (interactive use only).

HELP

Gives descriptions of IAf commands (interactive use only).

HTIME.

Issues dayfile message giving the model 176 accumulated clock cycle count for the job.

IFE,exp,ls.

Conditionally causes skipping of commands that follow. If exp is true, commands are processed. If false, commands are skipped until ELSE or ENDIF command with matching ls is reached.

exp	An expression; refer to listing under Symbolic Names and Functions Used in Expressions later in this section.
ls	Label string; 1 to 10 alphanumeric characters beginning with alphabetic character.

ITEMIZE,lfn$_1$,L=listlfn,BL,PW=n,PD,NR,N=n,E,U.

Lists information about records on a binary file. All parameters are optional. lfn$_1$ is order-dependent, and the other parameters are order-independent.

lfn$_1$	Name of file to be itemized (default is LGO).
L=listlfn	Output listed on file listlfn. If omitted, L=OUTPUT.
BL	Burstable listing; each file output starts at top of page. If omitted, the listing is compact; page eject only when current page is nearly full.

PW=n	Print width is 136 character lines if $n \geq 136$; print width is 72 character lines if $n<136$. If omitted, PW=72 if listing file is a terminal; otherwise, PW=136.
PD	Print density set at eight lines per inch. If omitted, print density is set at six lines per inch.
NR	No rewind of lfn. If omitted, lfn is rewound before and after operation.
N	File itemized until EOI encountered. If omitted, N=1. If N=0, file is itemized until empty file is processed. For N=n, n files are itemized.
E	Output expanded to list further information. If omitted, there is no expansion.
U	All records within ULIB type records itemized. If omitted, only the user library directory is listed.

KRONREF,P=lfn$_1$,L=lfn$_2$,S=lfn$_3$,G=lfn$_4$.

Generates cross-reference listing of symbols used by decks on MODIFY OPL.†

P=lfn$_1$	OPL input on file lfn$_1$ (default is OPL).
L=lfn$_2$	List output on file lfn$_2$ (default is OUTPUT).
S=lfn$_3$	System text from overlay lfn$_3$ (default is SYSTEXT).††
G=lfn$_4$	System text from local file lfn$_4$ (default is TEXT).

---

†System text referenced by the G and S parameters must contain symbol definition.

††If S=0 is specified, common deck references and statistics will be listed.

$$
\begin{array}{l}
\text{LABEL,lfn,VSN=vsn}_1\text{/vsn}_2\text{=...=vsn}_{n-1}\text{/vsn}_n\text{,D=den,}\\
\quad\text{FC=fcount,C=ccount,CV=cv,}\left\{\begin{matrix}\text{MT}\\ \text{NT}\end{matrix}\right\}\text{,PO=p}_1\text{p}_2\text{,...,p}_n\text{,}\\
\quad\text{F=format,NS=ns,LB=lb,VSN=vsn,}\left\{\begin{matrix}\text{CK}\\ \text{CB}\end{matrix}\right\}\text{,}\left\{\begin{matrix}\text{FI=fileid}\\ \text{L=fileid}\end{matrix}\right\}\text{,}\\
\quad\text{FA=fa,}\left\{\begin{matrix}\text{SI=setid}\\ \text{M=setid}\end{matrix}\right\}\text{,}\left\{\begin{matrix}\text{SN=secno}\\ \text{V=secno}\end{matrix}\right\}\text{,}\left\{\begin{matrix}\text{QN=seqno}\\ \text{P=seqno}\end{matrix}\right\}\text{,}\\
\quad\text{G=genno,E=gvn,}\left\{\begin{matrix}\text{CR=cdate}\\ \text{C=cdate}\end{matrix}\right\}\text{,}\left\{\begin{matrix}\text{RT=yyddd}\\ \text{T=ddd}\end{matrix}\right\}\text{,}\left\{\begin{matrix}\text{W}\\ \text{R}\end{matrix}\right\}\text{.}
\end{array}
$$

Assigns lfn to tape unit and accesses a new or existing tape. †

LBC,addr.

Reads one record from file INPUT and loads binary corrections, beginning at addr, into central memory.

LDI,FN=lfn,ID=id,OP=OP,DC=dc,UN=un,FM=fm. or
LDI,lfn,id,OP,dc,un,fm.

Copies a file of batch jobs on lfn to mass storage and enters each job into system input queue.

ID=id	Identifies local device to receive output. May not use if using UN=un or FM=fn. id must be octal and 0≤id≤67B.
OP=OP	Enters JSN in dayfile.
DC=dc	Specifies output disposition of submitted jobs.

dc	Meaning
IN	Output according to default option for job's origin type.
NO	Discards output.
TO	Queues output with wait disposition.

UN=un	Routes output to specified user name of remote batch user. (May not use when using ID=id.)
FM=fm	Routes submitted job output to a remote batch user with specified family name. (May not use when using ID=id.)

---

† Some parameters of this command are defined under Tape Management Options at the beginning of this section.

LENGTH,lfn.

Returns status of file lfn.

LIB,lfn=pfn/pw=password,PN=packname,R=r,NA,ND,WB.

Retrieves a copy of indirect access permanent file from catalog of special user name LIBRARY and makes it the primary file.†

ND	No-drop option.

LIBGEN,F=lfn_1,P=lfn_2,N=name,NX=n.

Generates user library file.

F=fln_1	Name of source file containing records to be placed on user library file lfn_2 (default is LGO).
P=lfn_2	Name of file on which the library is to be written (default is ULIB).
N=name	Name of user library being generated (default is lfn_2).
NX=n	If n is nonzero, no cross-references are given (default is n=0).

LIMITS,L=lfn.

Lists validation information, for user named on current USER command, on file lfn (default is OUTPUT).

LIST,L=lfn or
LIST,c_1,c_2,...,c_n,/string/

First format lists contents of local file lfn. Default is primary file. Second format lists lines of primary file (interactive use only).

c_1c_2,...,cn	Line numbers of lines in primary file to be listed.
/string/	Lines containing this string of characters will be printed.

---

† Some parameters of this command are defined under Permanent File Options at the beginning of this section.

LISTLB,lfn,$\left\{\begin{array}{l}\text{SI=setid}\\ \text{M=sitid}\end{array}\right\}$,$\left\{\begin{array}{l}\text{QN=seqno}\\ \text{P=seqno}\end{array}\right\}$,LO=ltype,L=out.

Reads ANSI labels on file lfn and writes them on file specified by out.†

LIST80,lfn$_1$,lfn$_2$,NR.

Reads file lfn$_1$ containing a COMPASS assembly listing and writes it, compressed to 80 columns, on lfn$_2$. NR specifies that lfn$_1$ is not rewound.

LOC,fwa,lwa. or
LOC,lwa. or
LOC.

Reads octal line images from INPUT into central memory in specified area; clears from fwa to lwa minus one before loading corrections.

LOCK,lfn$_1$,lfn$_2$,...,lfn$_n$.

Prevents writing on a file lfn$_i$.

LOGIN

Same as HELLO command.

LOGOUT

Same as BYE command.

LO72,I=lfn$_1$,S=lfn$_2$,L=lfn$_3$,T=x,H=xxx,LP,NR,Nx=y,Ix=y,
OX=y,IT.

Reformats files to 72 columns.

I=lfn$_1$	Reformat parameters are on file lfn$_1$ (default is INPUT).
S=lfn$_2$	Data to be reformatted is on file lfn$_2$ (default is SCR).
L=lfn$_3$	Reformatted data is listed on file lfn$_3$ (default is OUTPUT).
T=x	File to be reformatted is of type x (default is B).

---

† Some parameters of this command are defined under Tape Management Options at the beginning of this section.

x	Meaning
M	Modify source data.
C	COMPASS source data.
B	Other source data.

H=xxx	Number of characters per output line up to 160 (default is 72).
LP	Output is formatted for line printer.
NR	Output file is not rewound.
Nx=y	Number of characters to be moved (up to six fields): x (1 to 6) Number of field being moved. y Number of characters being moved.
Ix=y	Field from which data originates, where x is as in Nx and y is starting column of originating field.
Ox=y	Destination to which data is going, where y is the starting column of destination field.
IT	When specified, terminal option to alter command parameters is suppressed.

MACHINE,EP=state.

Enables some programs to run on models 825, 835, and 855.

state	Description
ON	Enables extended instruction stack purging.
OFF	Disables extended instruction stack purging.

MFL,nnnnnn,mmmm. or
MFL,CM=nnnnnn,EC=mmmm.

Sets maximum CM field length for each job step to nnnnnn and maximum extended memory field length for each job step to mmmm*1000_8.

MODE,m.

Sets CPU program exit mode to m $(0 \le m \le 17_8)$.†

MOVE,q..r,n,z

Moves lines of primary file (interactive use only).

q..r	Numbers of lines to be moved.
n	Line after which q..r are inserted. Default is last line of edit file.
z	Increment for resequencing of lines affected (default is 1).

NEW,lfn/ND.

Allows you to create new primary file. The old primary file and all local files are returned unless ND keyword is specified.

NOEXIT.

Suppresses transfer to command following next EXIT command even if error occurs.

NORERUN.

Clears rerun status of job.

NORMAL

Assumed mode on interactive system; converts all letters to Control Data display code; prints all readers and prompts.

NOSORT

Clears sort flag, preventing automatic sorting of primary file (interactive use only).

---

† A second parameter, n, is allowed for compatibility with earlier versions of NOS. The system forces n=7, regardless of value specified in command.

NOTE,lfn,NR./line$_1$/line$_2$/.../line$_n$

Allows you to create file containing lines specified on command.

lfn	Name of file being created (default is OUTPUT).
NR	No rewind of lfn; if not specified, lfn is rewound before and after each access.
/	Any character not used within line$_i$ that separates individual line$_i$ entries; must immediately follow NOTE command terminator.
line$_i$	Character string that constitutes one line of data in file lfn.

A series of NOTE commands, each with NR specified, can be used to create files containing more lines than can be entered with one NOTE command. Series should be followed with PACK command.

NULL

Selects NULL subsystem (interactive use only).

OFFSW,jsn,switch$_1$,switch$_2$,...,switch$_n$.

Clears sense switches for job with job sequence name jsn. If jsn is not specified, default is current job. Switch$_n$ is a number from 1 to 6; 0 clears all switches.

OLD,lfn=pfn/UN=username,PW=password,PN=packname,R=r, NA,ND,WB.

Retrieves copy of indirect access permanent file and makes it primary file. All local files are returned unless ND keyword is specified.†

---

† Some parameters of this command are defined under Permanent File Options at the beginning of this section.

ONEXIT.

Reverses effect of NOEXIT command.

ONSW,jsn,$switch_1$,$switch_2$,...,$switch_n$.

Sets sense switches for job with job sequence name jsn. Switches are an integer from 1 to 6; 0 sets all switches.

OUT. or
OUT,*,lfn_1,lfn_2,...,lfn_n.

Queues files that have been given deferred routing. Also routes special files with names OUTPUT, PUNCHB, PUNCH, P8 (if on mass storage). Second format queues all files except those named lfn_i.

PACK,lfn_1,lfn_2,x.

Packs lfn_1 into one record on lfn_2. If x is specified, lfn_1 is not rewound prior to pack.

PACKNAM,PN=packname,R=r. or
PACKNAM,packname,R=r. or
PACKNAM.

Directs subsequent permanent file requests to specified auxiliary device, packname, of device type r. PACKNAM with no parameters clears auxiliary device specification from previous PACKNAM command(s).

PASSWOR,oldpsword,newpsword. or
PASSWOR.

Changes your password from oldpsword to newpsword. If second form is used, parameters are read from single-line record in INPUT file in format oldpsword,newpsword.

PAUSE,jsn.

Sets the pause bit of your job with job sequence name jsn.

PBC,fwa,lwa.

Writes one record from specified area in central memory on PUNCHB.

PERMIT,pfn,username$_1$=m$_1$,username$_2$=m$_2$,...,
username$_n$=m$_n$/PN=packname,R=r,NA,WB.

Permits another user to access private or semiprivate file in your permanent file catalog with permission m$_i$.

PRIMARY,lfn.

Makes local file lfn primary file, or creates an empty primary file.

PROTECT,state. or
PROTECT,EC=state.

Activates or deactivates extended memory preservation assigned to your job field between job steps.

state	Description
ON	Preserves extended memory over job steps.
OFF	Cancels extended memory preservation (default).

PURGALL,CT=ct,AD=ad,MD=md,CD=cd,DN=dn,TY=ty,TM=tm,AF,
PN=packname,R=r,NA,WB.

Purges all permanent files in your catalog as specified by parameters.†

ct	File category.
ad	Last access date.
md	Last modification data.
cd	Creation date.
dn	Device number.
ty	File type INDIR (I), DIRECT (D), or ALL (A).
tm	Time of day on date specified by ad, md, or cd.
AF	Purge files with dates following the date specified by the ad, md, or cd parameter.

---

† Some parameters of this command are defined under Permanent File Options at the beginning of this section.

PURGE,pfn$_1$,pfn$_2$,...,pfn$_n$/UN=username,PW=password, PN=packname,R=r,NA,WB.

Removes files lfn$_i$ from permanent file device.[†]

QGET,JSN=jsn,DC=q,UJN=ujn,FN=lfn. or
QGET,jsn,q,ujn,lfn.

Removes file from queue and makes it a local file.

JSN=jsn	Specifies job sequence name of queued file.
DC=q	Disposition of queued file (default is WT).

q	Meaning
PR	Print
PU	Punch
PL	Plot
WT	Wait

UJN=ujn	Specifies user job name of queued file.
FN=lfn	Specifies local file name for queued file. If jsn is specified, it is the default; otherwise, ujn is the default.

RBR,n,name.

Loads one binary record from specified file. If n is less than four characters and is numeric, TAPEn is file name. If n contains nonnumeric character or is four or more characters long, n itself is file name. If n is omitted, TAPE is file name. name is one- to seven-character name used in record prefix.

[†] Some parameters of this command are defined under Permanent File Options at the beginning of this section.

READ,filename,n,z

Inserts lines of a file at specified location in primary file (interactive use only).

filename	Name of file to be inserted.
n	Line after which contents are inserted (default is last line of primary file).
z	Increments of line number of inserted file (default is 1).

RECOVER,JSN=jsn,OP=T. or
RECOVER,jsn,T.

Recovers detached jobs or interrupted terminal sessions (interactive use only).

JSN=jsn	Job sequence name of recoverable job.
OP=T	Inhibits recovery dialogue.

RENAME,nfn$_1$=ofn$_1$,nfn$_2$=ofn$_2$,...,nfn$_n$=ofn$_n$.

Changes name of local file ofn$_i$ to nfn$_i$.

REPLACE,lfn$_1$=pfn$_1$,lfn$_2$=pfn$_2$,...,lfn$_n$=pfn$_n$/
UN=username,PW=password,PN=packname,R=r,NA,WB.

Replaces indirect access permanent file pfn$_i$ with copy of local file lfn$_i$. †

REQUEST,lfn,VSN=vsn,/vsn$_2$=...vsn$_{n-1}$/vsn$_n$,
$\left\{\begin{matrix}\text{MT}\\\text{NT}\end{matrix}\right\}$,$\left\{\begin{matrix}\text{D=den}\\\text{den}\end{matrix}\right\}$, F=format,LB-lb, $\left\{\begin{matrix}\text{FC=fcount}\\\text{C=ccount}\end{matrix}\right\}$,
CV=cv,NS=ns,PO=p$_1$p$_2$...p$_n$,$\left\{\begin{matrix}\text{CK}\\\text{CB}\end{matrix}\right\}$.comment

Requests operator to assign device to lfn. †

RERUN.

Sets rerun status for job.

---

† Some parameters of this command are defined Permanent File Options or Tape Management Options at the beginning of this section.

RESEQ,lfn,type,start,step. or
RESEQ,type,start,step.

Resequences source files that have leading sequence numbers, or adds sequence numbers to unsequenced files. Use second format only in an interactive job on the primary file.

lfn	File to be resequenced.
type	Specifies type of file.

type	Meaning
B	BASIC source code.
T	Text source information; five-digit number plus a blank is added to beginning of each line.
F	FORTRAN source code files; adds five-digit number to beginning of each line without a line number; adds no blanks.
other or omitted	Resequenced according to start and step parameters; adds numbers where none are present.
start	First new line number (default is 100).
step	Increment of line numbers (default is 10).

RESOURC,$rt_1=u_1,rt_2=u_2,\ldots,rt_n=u_n$.

Specifies maximum number of tape units and disk packs.

rt_i	Description
MT	Magnetic tape (seven-track).
LO	Magnetic tape (seven-track) 200 cpi.
HI	Magnetic tape (seven-track) 556 cpi.
HY	Magnetic tape (seven-track) 800 cpi.
NT	Magnetic tape (nine-track) 800/1600 cpi.

rt_i	Description
HD	Magnetic tape (nine-track) 800 cpi.
PE	Magnetic tape (nine-track) 1600 cpi.
GE	Magnetic tape (nine-track) 6250 cpi.
DIi	844-21 Disk Storage Subsystem (half-track) ($1 \le i \le 8$).
DJi	844-4x Disk Storage Subsystem (half-track) ($1 \le i \le 8$, x=1 or 4).
DKi	844-21 Disk Storage Subsystem (full-track) ($1 \le i \le 8$).
DLi	844-4x Disk Storage Subsystem (full-track) ($1 \le i \le 8$, x=1 or 4).
DMi	885 Disk Storage Subsystem (half-track) ($1 \le i \le 3$).
DQi	885 Disk Storage Subsystem (full-track) ($1 \le i \le 3$).
DV	819 Disk Storage Subsystem (single-density).
DW	819 Disk Storage Subsystem (double-density).

NT may not be specified concurrently in the same job step with HD, PE, or GE.

MT, HI, HY, and LO are equivalent, and the last specification determines seven-track tape resource.

u_i	The maximum number of units of resource type rt_i the job will use concurrently.

RESTART,lfn,nnnn,x_i.

Restarts previously terminated job from a specified checkpoint.

lfn	Checkpoint file.
nnnn	Number of checkpoint from which to restart.

x_i	Meaning
RI	Command file on lfn is not restored.

x_i	Meaning
NA	RESTART does not abort if required file is not available.
FC	If file is local to restart job, RESTART does not replace it with file on checkpoint dump.

RETURN,lfn$_1$,lfn$_2$,...,lfn$_n$. or
RETURN,*,lfn$_1$,lfn$_2$,...,lfn$_n$.

Releases file space of all lfn$_i$ and/or job attachment. Second format releases file space and/or job attachment for all files except those specified by lfn, or those with no-auto-drop status.

REWIND,lfn$_1$,lfn$_2$,...,lfn$_n$. or
REWIND,*,lfn$_1$,lfn$_2$,...,lfn$_n$.

Rewinds files and positions them to BOI. Second format rewinds all except specified files lfn$_i$ and positions them to BOI.

RFL,nnnnnn,mmmm. or
RFL,CM=nnnnnn,EC=mmmm.

Sets initial running CM field length for each job step to nnnnnn and initial running extended memory field length for each job step to $mmmm*1000_8$.

ROLLOUT,t.

Rolls out your job and releases all memory assigned to job. t specifies rollout time period in job scheduler delay intervals (assume 1 second as the default scheduler interval) ($0 \le t \le 777700_8$).

ROUTE,lfn,DC=dc,DEF,EC=ec,FC=fc,FID=fid,FM=fm,IC=ic,
ID=id,PRI=pri,REP=rep,SC=sc,TID=tid,UJN=ujn,
UN=un.

Prepares file lfn for entry in input or output queue and optionally places it in selected queue.

DC=dc Disposition code.

dc	Meaning
IN	Release file to input queue.

dc	Description
LP	Print on any line printer.
LR	Print on 580-12 line printer.
LS	Print on 580-16 line printer.
LT	Print on 580-20 line printer.
NO	Release file to input queue. Job output is discarded at job termination.
PB	Punch system binary.
PH	Punch coded.
PL	Plotter.
PR	Print on any line printer.
PU	Punch coded.
P8	Punch 80-column binary.
SB	Punch system binary.
SC	Rescind prior routing and make file local.
TO	Release file to input queue; release output to wait queue unless job routes it elsewhere.
WT	Wait disposition.

DEF	Deferred routing of file to queue until later job step or end of job.
EC=ec	External characteristics for print or punch files.

ec	Significance for Print File
A4	Provided for NOS/BE compatibility.
A6	ASCII graphic 63/64-character set.
A9	ASCII graphic 95-character set.
B4	Provided for NOS/BE compatibility.
B6	CDC graphic 63/64-character set.

ec	Significance for Punch Code
ASCII	ASCII code.
026 or 026	026 mode.
029 or 029	029 mode.
SB	System binary.
80COL	80-column binary.

ec	Significance for Plot File
T6	6-bit transparent plot data.
T8	8-bit transparent plot data.

FC=fc	Two-character alphanumeric forms code.
FID=fid	Informative message for NOS/BE compatibility.
FM=fm	Indicates routing to remote batch or interactive terminal with one- to seven-character alphanumeric family name specified. FM only causes implicit remote routing.
IC=ic	Internal characteristics.

ic	Meaning
DIS	Display code.
ASCII	ASCII code.
BIN	Binary.

ID=id	Selects local device. ID alone causes implicit local routing.
PRI=pri	File priority message for NOS/BE compatibility.
REP=rep	Specifies number of additional file copies.
SC=sc	Spacing code for 580 line printer with programmable format control (PFC).

ST=st	Station identifier for NOS/BE compatibility.
TID=tid	Indicates implicit remote routing; TID=C causes routing to central site.
UJN=ujn	User job name of user to whom file is routed.
UN=un	Specifies a remote batch or interactive user name. UN alone causes implicit remote routing.

RTIME.

Issues accumulated time since deadstart in seconds to dayfile.

RUN,parameters

Compiles and/or executes local file (interactive use only). One or more of following parameters may be used.

B=lfn or
C=lfn
	Compiles source program and writes resultant binary to local file lfn.

I=lfn	Compiles and/or initiates execution of local file lfn if subsystem and program are compatible.
T,q_1,q_2,...,qn	This command is used only when running an object code FORTRAN program under execute subsystem. q_i specifies new local file names used in place of those that currently exist in PROGRAM statement.

cS

Abbreviated job status command gives abbreviated response (interactive use only). c is control character on terminal.

SAVE,lfn$_1$=pfn$_1$,lfn$_2$=pfn$_2$,...,lfn$_n$=pfn$_n$/PW=password,
CT=ct,M=m,SS=subsyst,PN=packname,R=r,NA,BR=br,WB.

Retains copy of local file lfn$_i$ as indirect access file pfn$_i$.†

SCOPY,lfn$_1$,lfn$_2$,n,fchar,lchar,NA,R,fcs,fline,
lline,ns.

Copies specified number of coded files from one file to another, displaying EORs and EOFs.

lfn$_1$	Specifies name of file to be copied.
lfn$_2$	Specifies name of file to which lfn$_1$ is copied (default is OUTPUT).
n	Number of files to copy (default is 1).
fchar	Specifies position of first character (default is 1).
lchar	Specifies position of last character (default is 136).
NA	Specifies no abort when line terminator does not appear before an EOR.
R	Rewinds lfn$_1$ and lfn$_2$ before copying.
fcs	Specifies character set code of lfn$_1$. 0 indicates display or 6/12 display code (default).
fline	Specifies line number of first line to be copied if lfn$_1$ is sequenced (default is 1).
lline	Specifies line number of last line to be copied if line is sequenced (default is parameter n).
ns	Specifies no structure reporting. System does not display EORs and EOFs on lfn$_2$. ns can be any nonnull value.

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† Some parameters of this command are defined under Permanent File Options at the beginning of this section.

SET,sym=exp.

Allows you to specify subsystem error flag (flag that determines whether skipped commands are entered in day file), or set software registers to control flow of job.

sym	A symbolic name as follows:	
	R1	Control register 1.
	R2	Control register 2.
	R3	Control register 3.
	R1G	Global control register.
	EF	Error flag.
	EFG	Global error flag.
	DSG	Dayfile skipped control statement flag.
	SS	Interactive subsystem indicator (default is NULL).
exp	Any legal expression; refer to listing under Symbolic Names and Functions Used in Expressions later in this section.	

SETASL,s.

Specifies new account block SRU limit for job.

SETCORE,p. or
SETCORE,-p.

Sets each word, except word two, within field length to the value specified by p. If -p, complement of p is set (default is p=0).

p	Fill Characters
0	0
ZERO	Zeros (0)
INDEF	Indefinite (1777 0000...0000)
INF	Infinite (3777 0000...0000)

SETFS,lfn$_1$,lfn$_2$...,lfn$_n$/FS=fs. or
SETFS,*,lfn$_1$,lfn$_2$...,lfn$_n$/FS=fs.

Sets auto-drop or no-auto-drop status on local file lfn$_i$. Second format specifies status to all files except lfn$_i$.

fs	Description
AD	Auto-drop (default).
NAD	No-auto-drop.

SETJOB,UJN=ujn,DC=dc,OP=op. or
SETJOB,ujn,dc,op.

Changes some of current job's attributes.

ujn	Changes job's UJN to ujn. Default for interactive jobs is user index hash; default for other jobs is ujn specified on Job command.
dc	Specifies output disposition.

dc	Meaning
TO	Queues output with wait disposition.
NO	Discards output.
DF	Specifies default output processing, depending on job's origin type. No output is queued for interactive jobs.

op	Specifies end of job processing option. Not applicable to noninteractive jobs.

op	Meaning
SU	Suspended state until recovered or timed out.
TJ	Terminates job.

SETJSL,s.

Specifies new job step SRU limit for subsequent job steps. s is maximum number allowed.

SETPR,p.

Decreases CPU priority of job by p amount.

SETTL,t.

Specifies new time limit for subsequent job steps, with t the maximum number allowed.

SKIP,ls.

Causes unconditional skipping of commands that follow.

ls	Label string; 1 to 10 alphanumeric characters, beginning with alphabetic character.

SKIPEI,lfn.

Positions lfn at EOI.

SKIPF,lfn,n,m.

Bypasses n files (default is one file), in the forward direction, from current position on lfn. m is C for coded mode and B for binary (default is binary).

SKIPFB,lfn,n,m.

Bypasses n files (default is one file), in the reverse direction, from current position on lfn. m is C for coded mode and B for binary (default is binary).

SKIPR,lfn,n,level,m.

Bypasses n records (default is one record), in the forward direction, from current position on lfn. level specifies level number; from 0 to 16 for EOR and EOF to be counted, 17 for just EOF to be counted. m is C for coded mode and B for binary (default is binary).

SORT,lfn,NC=n.

Sorts file, lfn, or line or statement images in numerical order based on leading line numbers consisting of n digits (n default is 5).

STIME.

Issues current value of the SRU accumulator to job's dayfile.

SUBMIT,lfn,q,NR.c

Submits batch job on lfn to input queue for processing.

q Specifies disposition of job output.

q	Meaning
BC or B	Disposed to local batch queue and printed/punched at central site.
NO or N	Disposed to local batch queue, dropped at job termination; (default).

E=un or
RB=un
	Disposed to remote batch queue or interactive user, un.

TO	Disposed to wait queue.

NR Inhibits rewind of file specified by cREAD.

c Specifies escape character used to identify reformatting directives (if omitted, / is assumed).

Reformatting directives:

cJOB	Reformats submit file (selects cNOTRANS, cSEQ, and cPACK).
cUSER	Inserts USER command same as submitting job.
cEOR	Writes end-of-record.
cEOF	Writes end-of-file.
cSEQ	Removes subsequent line numbers.
cNOSEQ	Reverses effect of cSEQ.
cPACK	Removes subsequent EOR and EOF marks.
cNOPACK	Reverses effect of cPACK directive.
cTRANS	Indicates transmission mode.
cNOTRANS	Reverses effect of cTRANS directive.

Reformatting directives:

cREAD,lfn	Inserts file lfn in place of cREAD directive in submit file.
cREWIND, lfn	Rewinds file lfn to BOI.
c_1EC=c_2	Changes escape code character from c_1 to c_2.

SUMMARY,OP=$p_1p_2 \ldots p_n$,FN=lfn_1,O=lfn_2. or
SUMMARY,$p_1p_2 \ldots p_n$.

Lists information about your job specified by options. All options are identical to those for ENQUIRE command. If no parameters are specified, default is OP=R.

SWITCH,s_1,s_2,...,s_n.

Sets sense switches for reference by your program.

TCOPY,I=lfn_1,O=lfn_2,F=format,TC=tc,N=copycnt,
CC=charcnt,EL=erlimit,PO=p_1p_2,L=lfn_3.

Copies E, B, X, or SI-coded format tape to mass storage file, I tape, or SI-binary tape and also generates E or B format tape from mass storage file, I tape, or SI-binary tape. To use TCOPY, E, B, X, or SI-coded tape must be assigned in S (stranger) tape format. Parameters are both order-dependent and order-independent.

I=lfn_1	Copies from this file (default is INPUT).
O=lfn_2	Copies to this file (default is OUTPUT).
F=format	Data format that specifies type of conversion for copy operation. This can be E, B, X, or SI (default is X).
TC=tc	Copy termination condition that defines use of copy count specified by N parameter (default is EOD).

tc	Meaning
F or EOF	N specifies number of files to copy.

tc	Meaning
I or EOI	N is ignored. Copy to EOI.
D or EOD	N specifies number of double EOFs to copy to.

N=copycnt	Copy count used by copy termination condition TC (default is 1).
CC=charcnt	Maximum character count per line for E or B tape (defaults are 136 for E tape and 150 for B tape).
EL=erlimit	Error limit that sets number of nonfatal errors allowed before abort. EL=U specifies unlimited (default is 0).
PO=p_1p_2	Extended error processing.

po	Meaning
E	Process input blocks with parity errors or block-too-large errors (default is skip error blocks).
T	When generating E or B format tape, truncate data beyond maximum line size (default is split lines exceeding maximum line size into multiple lines).

L=lfn_3	Alternate file to receive parity error messages (default is OUTPUT).

TDUMP,I=lfn_1,L=lfn_2,O,A,R=rcount,F=fcount,N=lines,NR.

Lists a file in octal or alphanumeric form. Dumps entire or specified parts of file.

I=lfn_1	Input file name (default is TAPE1).
L=lfn_2	Output file name (default is OUTPUT).
O	Octal dump only (default is O and A).
A	Alphanumeric dump only (default is O and A).
R=rcount	Number of records to dump.
F=fcount	Number of files to dump.

N=lines	Maximum lines that can be dumped.
NR	Do not rewind lfn_1 before dump.

TEXT

Selects text mode. To terminate, enter termination sequence, end-of-text (ETX) character, or user break as only input on line (interactive use only).

TIMEOUT

Changes no-timeout status to standard timeout status; you are logged out after 10 minutes of inactivity (interactive use only).

TRMDEF,L=lfn,tc_1=v_1,...,tc_n=v_n.

Changes characteristics of network terminal.

L=lfn	Writes redefinition information on file lfn (default is OUTPUT).
tc_i	Specifies characteristic to be changed.

tc_i	Meaning
AL	Abort line character.
BS	Backspace character.
B1	Interruption character user break 1.
B2	Termination character user break 2.
CI	Carriage return idle count.
CN	Cancel line character.
CT	Control character.
DL	Transparent input mode delimiter.
EP	Echoplex mode.
IN	Input device.
LI	Line feed idle count.
MS	Message.
OP	Output device.

tc_i	Meaning
PA	Parity.
PG	Page wait.
PL	Page length.
PW	Page width.
SE	Special editing.
TC	Terminal class.

v_i	Specifies value for characteristic. Special characters must be delimited by $. Refer to the NOS Reference Set, Volume 3, for value ranges and defaults.

ujn,Pp,Tt,CMfl,ECfe.cm or
ujn,p,t,fl,fe.cm

Specifies name and information for individual jobs.

p	Priority level; currently assigned by system.
t	Job step time limit (default is 64 seconds).
fl	Maximum CM field length.
fe	Maximum extended memory field length.
cm	Conversion mode (located in columns 79 and 80). cm=26 for conversion of coded cards on 026 mode and cm=29 for conversion in 029 mode.

UNLOAD,lfn$_1$,lfn$_2$,...,lfn$_n$. or
UNLOAD,*,lfn$_1$,lfn$_2$,...,lfn$_n$.

First format releases file space and/or job attachment for files specified without decrementing resource demand count. Second format releases file space and/or job attachment for all files, except those specified, without decrementing resource demand count.

UNLOCK,lfn$_1$,lfn$_2$,...,lfn$_n$.

Clears write interlock bit for local file lfn$_i$.

UPROC,FN=pfile.

Specifies prologue contained in pfile; executed at start of each of your jobs.

USECPU,n.

Specifies which CPU is to be used for processing: CPU0 for n=1, CPU1 for n=2, and either CPU for n=0.

USER,username,password,familyname.

Sets validation and extent of resources for user name.

username	User name.
password	User's password.
familyname	Identifies family of permanent devices.

VERIFY,lfn_1,lfn_2,p_1,p_2,...,p_n.

Performs binary comparison of all data from current position of files specified.

lfn_1	Name of first file (if omitted, TAPE1 is assumed).
lfn_2	Name of second file (if omitted, TAPE2 is assumed).
p_i	Can be any of the following:

p_i	Meaning
N=0	Terminates on first empty file encountered on either file.
N=x	Verifies x files (default is 1).
N	Terminates when EOI is encountered on either file.
E=y	Lists first y errors (if omitted, 100 is assumed).
E	E=0; lists no errors.
L=lfn_3	Lists errors on lfn_3 (default is OUTPUT).

P_i	Meaning
A	Aborts if errors occur.
C	Sets coded mode on both files.
C1	Sets coded mode on lfn_1 only.
C2	Sets coded mode on lfn_2 only.
BS=bsize	Specifies maximum block size for S or L tape. Defaults are 1000_8 for S tape and 2000_8 for L tape.
R	Rewinds both files before and after.

VFYLIB,lfn_1,lfn_2,lfn_3,NR.

Performs a binary comparison of files lfn_1 and lfn_2 and lists replacements, deletions, and insertions on lfn_3. If NR is specified, lfn_1 and lfn_2 are not rewound (defaults are lfn_1=OLD, lfn_2=NEW, and lfn_3=OUTPUT).

VSN,lfn_1=vsn_1,lfn_2=vsn_2,...,lfn_n=van_n.

Associates volume serial number vsn_i with file lfn_i.

WBR,n,rl.

Writes binary record of length rl from central memory on specified file n, beginning at its current position. Refer to RBR for description of n.

WHATJSN,username

Allows validated user in access subsystem to determine job sequence name of specified user username currently connected (interactive use only).

WHILE,exp,ls.

Delimits group of commands and causes them to be processed iteratively as long as WHILE expression is true when used in conjunction with ENDW. When WHILE expression is no longer true, WHILE command is processed and then following commands are skipped until ENDW command with matching ls is found.

exp	An expression. Refer to the listing under Symbolic Names and Functions Used in Expressions later in this section.
ls	Label string; 1 to 10 alphanumeric characters, beginning with alphabetic character.

WRITE,filename,c_1,c_2,...,c_n,/string/

Appends lines and line numbers of primary file to destination file filename. If specified, lines and string parameters qualify lines to be copied (interactive use only).

WRITEF,lfn,x.

Writes x file marks on lfn.

WRITEN,filename,c_1,c_2,...,c_n,/string/

Copies lines while removing line numbers to unsequenced destination file filename from sequenced primary file. If specified, lines and string parameters qualify lines to be copied (interactive use only).

WRITER,lfn,x.

Writes x empty records on lfn.

X,ccc

System interprets command as batch command (interactive use only).

ccc	Valid batch command.

SYMBOLIC NAMES AND FUNCTIONS USED IN EXPRESSIONS

Symbolic names with fixed arithmetic values:

ARE	Arithmetic error.
BCO	Local batch origin.
CPE	CPU abort.
DRE	Deadstart rerun.
ECE	Extended memory parity error.
FLE	File limit error.
FSE	Forced error.
IDE	Idle down.
ITE	SCP invalid transfer address.
MLE	Message limit.
MXE	Maximum number of error flags.
ODE	Operator drop.
OKE	Operator kill drop.
ORE	Override error.
PCE	PPU call error.
PEE	CPU parity error exit.
PPE	PPU abort.
PSE	Program stop error.
RAE	Recovery abort.
RRE	Rerun error.
SRE	SRU limit error.
SSE	Subsystem abort error.
STE	Suspension timeout.
SVE	Security violation.
SYE	System abort.
TIE	User break one.
TAE	User break two.

TJE	Terminate job.
TKE	Track limit error.
TLE	Time limit error.

Symbolic names with variable arithmetic values that depend upon job state:

CMN	Central memory (CM) RFL divided by 100.	
DSC	Flag indicates skipped commands entered to dayfile.	
ECN	Extended memory RFL divided by 1000_8.	
EF	Previous error flag.	
EFG	Global error flag.	
EM	Current exit mode.	
FL	Job field length.	
HID	Two-character machine identifier.	
MFL	Maximum CM field length.	
MFLL	Maximum extended memory field length.	
OT	Job origin type associated with:	
	BCO	Local batch origin.
	EIO	Remote batch origin.
	SYO	System origin.
	TXO	Interactive origin.
PNL	Procedure nesting level:	
	0	Job command record
	1	First level procedure
	.	.
	.	.
	50	50th level procedure
R1	Contents of control register 1.	
R1G	Contents of global control register 1.	
R2	Contents of control register 2.	
R3	Contents of control register 3.	

SS	Interactive job subsytem; in expressions, SS can be associated with: ACCESS BASIC BATCH EXECUTE FORTRAN FTNTS NULL
SYS	Host operating system associated with: NOS Network Operating System. NOSB Network Operating System/ Batch Environment (NOS/BE).
TIME	Current time of day.
VER	Version of operating system.

Names with Boolean value:

SWn	Setting (1 is on and 0 is off) of sense switch n ($1 \le n \le 6$).
TRUE	True value.
T	True value.
FALSE	False value.
F	False value.

DT,dt.

DT function determines information about type of device on which file resides (function used only within expressions of FILE function). Value of DT function is true if dt matches two-character mnemonic of file specified in FILE function format.

dt	Two-character mnemonic indicating device type (refer to list of device types in description of FILE function).

FILE,lfn,expression.

FILE function determines attributes of file lfn when used as expression or part of expression in the IFE, WHILE, or DISPLAY commands.

lfn	File name.
expression	Any expression consisting of operators, DT function, and/or special FILE symbolic names; FILE expression cannot include NUM or another FILE function.

Symbolic Names for FILE Expression:

Names with values:

EQ	Equipment status table (EST) ordinal (from 0 to 77_8).

Names with true/false values:

BOI	File on mass storage is at BOI.
EOF	File on mass storage is at EOF.
EOI	File on mass storage is at EOI.
MS	File is on mass storage.
OP	File is opened.
EX	Execute-only file.
AS	File is assigned to user´s control point.

File types:

LO	Local.
IN	Input.
LI	Library.
PM	Direct access permanent file.
PT	Primary.
QF	Queued.

Device types:

DE	Extended memory.
DI	844-21 Disk Storage Subsystem (half-track).
DJ	844-4x Disk Storage Subsystem (half-track) (x is 1 or 4).
DK	844-21 Disk Storage Subsystem (full-track).
DL	844-4x Disk Storage Subsystem (full-track) (x is 1 or 4).
DM	885 Disk Storage Subsystem (half-track).
DP	Distributive data path.
DQ	885 Disk Storage Subsystem (full-track).
DV	819 Disk Storage Subsystem (single-density).†
DW	819 Disk Storage Subsystem (double-density).†
MS	Mass storage.
MT	Magnetic tape drive (seven-track).
NE	Null equipment.
NT	Magnetic tape drive (nine-track).
TT	Interactive terminal.

NUM,name.

NUM function determines if name has numeric value. Used with SET, WHILE, IFE, and DISPLAY commands. If name is numeric, functional value is true; otherwise, it is false.

name	Character string; 1 to 40 characters in length.

---

† Applies only to model 176.

PROCEDURE-RELATED COMMANDS AND DIRECTIVES

2

BEGIN,pname,pfile,p_1,p_2,...,p_n. or
-pname,pfile,p_1,p_2,...,p_n. or
pname,p_1,p_2,...,p_n.

Initiates processing of procedure pname. Second format used only in interactive jobs. Third format used only if procedure is first procedure in local file pname, is part of global library file, or is in system library.

pname	Name of procedure; default is next procedure on pfile.
pfile	Name of file on which procedure pname is located; default is PROCFIL.
p_i	Specifies optional parameter that may affect substitution for keyword in procedure.

Format	Description
keywrd	Specifies parameter identical to keyword on procedure header.
keywrd? or ?	Specifies interactive processing.
keywrd=	Removes keywrd in procedure body unless overridden by checklist specification.
keywrd=val	Allows order-independent substitution of a 1- to 40-character symbolic name or value val. val replaces keywrd in procedure body unless associated checklist specifies otherwise. The formats for val are the same as those shown with parameter val.
val	Unless overridden by checklist specification, assigns this 1- to 40-character symbolic name or value to keyword whose position in header parameter list matches position of this parameter in BEGIN parameter list.

Format	Meaning
val	Substitutes string val itself.
val+	Substitutes decimal value associated with val.
val+D	Substitutes decimal value associated with val.
val+B	Substitutes octal value associated with val.

The formats of this command may differ for passive procedures. Refer to the NOS 2 Reference Set, Volume 3.

REVERT,opt.com

Terminates procedure processing.

opt	Controls revert options and whether command appears at terminal and job dayfile. Default returns to command following BEGIN.

opt	Meaning
ABORT	Returns control to next EXIT command unless NO EXIT command has been processed.
EX	Returns control to level calling BEGIN; command com is executed next.
NOLIST	Returns control to command following BEGIN. Suppresses display at terminal and dayfile.

com	Specifies comment or, if used with EX, a command.

.PROC,pname*I,p_1,p_2,...,p_n.

Interactive format of the procedure header directive; begins and names procedure. Also identifies keywords, descriptions of keywords, acceptable values, and syntax.

pname*1 Name of procedure; any 1 to 7 alphanumeric character (cannot be named BEGIN). *I enables parameter prompting.

p_i Parameter of form:

keywrd"description"=(checklist)

keywrd Specifies keyword of parameter.

description Specifies text string used for prompting.

checklist List of acceptable values and syntax. More than one entry, separated by commas, may be in checklist.

checklist Entry	Meaning
*N=value	Specifies the substitution for keywrd when there is no parameter entry for p_i on procedure call.
*k=value	Specifies the substitution for keywrd when parameter entry for p_i on procedure call is only keywrd.
*F=value	Specifies that parameter entry for p_i on procedure call be file name that conforms to operating system format for file names.

checklist Entry	Meaning
*A= value	Specifies substitution for keywrd regardless of specifications for p_i on procedure call.
*Sn (set)= value	Specifies that parameter entry for p_i on procedure call contains 1 to n characters from set.
string= value	Specifies substitution for keywrd when parameter entry for p_i on procedure call matches string.

.DATA,lfn

Allows data needed by a procedure to be stored within that procedure.

lfn	File to which data is written.

.EOF

Records end-of-file on data file specified by .DATA command.

.EOR

Records end-of-record on data file specified by .DATA command.

.*

Allows you to include comments within procedure that do not appear in dayfile.

.HELP or
.HELP,,NOLIST or
.HELP,keywrd or
.HELP,keywrd,NOLIST

Indicates that text following is information about the procedure or its parameters.

keywrd	Specifies one keyword in .PROC directive.

The first and second formats indicate that text describes the procedure itself. NOLIST suppresses display of the parameter list.

The third and fourth formats indicate that text describes the parameter associated with keywrd. NOLIST suppresses display of acceptable parameter values.

.ENDHELP

Specifies the end of help text in procedure body.

CYBER LOADER COMMAND FORMATS 3

EXECUTE,eptname,p_1,p_2,...,p_n.

Causes completion of load and execution of loader program.

eptname	Name of entry point in one of loaded modules at which execution is to begin.
p_i	Execution-time parameters to be passed to loaded program.

LDSET,option_1,option_2,...,option_n.

Provides you with control of load operations. Multiple parameters for LDSET options are separated by slashes (for example, LIB=LIB1/LIB2/LIB3).

option_i	Description
COMMON=lcbname,/ .../lcbname_n or COMMON	Named-labeled common blocks are moved to nearest common ancestor of all segments that reference them. No parameters causes all labeled common blocks to be moved.
EPT=emptname/ or .../eptname_n NOEPT=eptname_1/ .../eptname_n	Provides control over entry points of capsules, overlays, and OVCAPs.
ERR=p_3	Selects one of three methods of handling loader errors.

p_3	Meaning
ALL	Program aborted for fatal, nonfatal, and catastrophic errors.
FATAL	Program aborted for fatal and catastrophic errors.
NONE	Catastrophic errors cause job abortion.

<table>
<tr><th>option_i</th><th colspan="2">Description</th></tr>
<tr><td>FILES=lfn_1/
.../lfn_n
or
STAT=lfn/
.../lfn_n</td><td colspan="2">Permits CYBER Record Manager users to ensure that library programs are loaded for processing of specified files.</td></tr>
<tr><td>LIB</td><td colspan="2">Causes local library set to be cleared.</td></tr>
<tr><td>LIB=file_1/
.../file_n</td><td colspan="2">Specifies one or more library files in local library set.</td></tr>
<tr><td>MAP=p_1/lfn_1
or
MAP=/lfn_1
or
MAP=p_1</td><td colspan="2">Controls generation of load map. Map is written to file lfn_1. Map content is specified by p_1.</td></tr>
<tr><td></td><th>p</th><th>Meaning</th></tr>
<tr><td></td><td>N</td><td>No map.</td></tr>
<tr><td></td><td>S</td><td>Statistics.</td></tr>
<tr><td></td><td>B</td><td>Block map.</td></tr>
<tr><td></td><td>E</td><td>Entry point map.</td></tr>
<tr><td></td><td>X</td><td>Entry point cross-references.</td></tr>
<tr><td></td><td>omitted</td><td>Current job default.</td></tr>
<tr><td>OMIT=eptname_1/
.../eptname_n</td><td colspan="2">Directs that specified entry point names are to remain unsatisfied, regardless of whether module containing these entry point names is loaded.</td></tr>
<tr><td>PD=p</td><td colspan="2">Provides control over print density of load map. Valid densities are 6 and 8 lines per inch (default set by installation).</td></tr>
<tr><td>PRESET=p_2
or
PRESETA=p_2</td><td colspan="2">Specifies values to which unused memory is set prior to execution of load program. For PRESETA, the lower 17 bits (CM) or lower 24 bits (extended memory) of each word contains its address.</td></tr>
</table>

option_i	Description
	For PRESET=p_2:

$P2$	Octal Preset Value
NONE	No presetting for extended memory; same as zero for CM.
ZERO	00...0
ONES	77...7
INDEF	177700...0
INF	377700...0
NGINDEF	600...0
NGINF	400...0
ALTZERO	2525...2525
ALTONES	5252...5252
DEBUG	600...040040...0

For PRESETA=p_2:

$P2$	Octal Preset Value
NONE	No presetting for extended memory; same as zero for CM.
ZERO	00...0addr
ONES	77...7addr
INDEF	177700...0addr
INF	377700...0addr
NGINDEF	600...0addr
NGINF	400...0addr
ALTZERO	2525...2525addr
ALTONES	5252...5252addr
DEBUG	600...04004addr

option$_i$	Description
PS=p	Provides control over page size of load map. P can range from 10 to 1 000 000 lines per page (default set by installation).
REWIND and NOREWIN	Alters default option for rewinding files prior to loading.
SUBST=pair$_1$/.../pair$_n$	Changes external references to entry point names to other entry point names. pair$_i$ is a pair of entry point names in the form: eptname$_1$-eptname$_2$. As a result of SUBST, reference to eptname$_1$ becomes reference to eptname$_2$.
USE=eptname$_1$/.../eptname$_n$	Forces loading of object modules to ensure that specified entry points are included in load.
USEP=pname$_1$/.../pname$_n$	Causes indicated object modules to be loaded regardless of whether or not they are needed to satisfy external references.

LIBLOAD,libname,eptname$_1$,eptname$_2$,...,eptname$_n$.

Performs load of modules from library.

libfile	Name of library file containing object modules with specified entry point names (eptname$_i$).

LOAD,lfn$_1$,lfn$_2$,...,lfn$_n$.

Loads object modules.

lfn$_i$	Name of file to load.
lfn/R	Forces rewind prior to loading (default).
lfn/NR	Inhibits rewind prior to loading.

MAP,p.

Specifies default options for load maps.

p	Description
OFF	No map.
PART	Block map. Statistics.
ON	Statistics. Entry point map. Entry point cross-reference map.
FULL	Block map. Statistics. Entry point map, entry point cross-reference map.

NOGO,lfn,eptname$_1$,eptname$_2$...,eptname$_n$. or
NOGO,lfn. or
NOGO.

Causes completion of load.

lfn	Name of logical file on which core image module is to be written.
eptname$_i$	Names of entry points to be included in header.

SATISFY,libfile$_1$,libfile$_2$,...,libname$_n$. or
SATISFY.

Satisfies external references.

libfile$_i$	Name of the system or user library file.

SEGLOAD.

Specifies that segmentation is to take place during loading.

SLOAD,lfn,name$_i$,...,name$_n$.

Requests loader to load modules from local file.

lfn	Local file name.
lfn/R	Forces rewind prior to loading (default).
lfn/NR	Inhibits rewind prior to loading.
name$_i$	Names of modules to be loaded in order encountered on lfn.

SYSTEM UTILITY COMMAND FORMATS 4

EDIT,lfn$_1$,m,lfn$_2$,lfn$_3$. or
EDIT,FN=lfn$_1$,M=m,I=lfn$_2$,L=lfn$_3$.

Calls Text Editor program.

FN=lfn$_1$	Name of file to be edited.
M=m	Mode of file processing:

m	Meaning
ASCII or AS	ASCII mode edit file.
NORMAL or N	NORMAL mode edit file.

Default is NORMAL mode.

I=lfn$_2$	Reads edit directives from file lfn$_2$ (default is INPUT).
L=lfn$_3$	Writes output on file lfn$_3$ (default is OUTPUT).

For explanation of EDIT directives refer to the Text Editor Reference Manual.

LIBEDIT,p$_1$,p$_2$,...,p$_n$.

Edits and replaces uniquely identifiable records on file with records from one or more correction files.

p$_i$	Description
B=lfn$_1$	Uses file lfn$_1$ for replacement file. If omitted, LGO is assumed. B=0 indicates no replacement file is used.
C	Copies new library file over old library file after processing.
D	Ignores errors and continues.
I=lfn$_2$	Reads directives from next record on file lfn$_2$. If omitted, INPUT is assumed. I=0 indicates no directives input is used.

<table>
<tr><th>P_i</th><th>Description</th></tr>
<tr><td>LO=listopt</td><td>Lists options.
<table>
<tr><th>listopt</th><th>Meaning</th></tr>
<tr><td>C</td><td>List directives.</td></tr>
<tr><td>E</td><td>List errors.</td></tr>
<tr><td>M</td><td>List modifications.</td></tr>
<tr><td>N</td><td>List records written to new file.</td></tr>
<tr><td>F</td><td>Full listing.</td></tr>
</table></td></tr>
<tr><td>L=lfn_3</td><td>Lists output on file lfn_3. If omitted, OUTPUT is assumed. L=0 lists no output.</td></tr>
<tr><td>N=lfn_4</td><td>Writes new program library on file lfn_4. If omitted, NEW is assumed.</td></tr>
<tr><td>NA</td><td>No abort on directive errors.</td></tr>
<tr><td>NI</td><td>Do not insert unreplaceable records at EOF of new file.</td></tr>
<tr><td>NX=n</td><td>Includes new user library cross-references if NX=0. If NX≠0, none included. Used only with U or *LIBGEN. If omitted, NX=0 is assumed.</td></tr>
<tr><td>NR</td><td>Does not rewind library files before or after processing.</td></tr>
<tr><td>P=lfn_5</td><td>Reads old program library from file lfn_5. If omitted, OLD is assumed. P=0 indicates no old program library is used.</td></tr>
<tr><td>U</td><td>Requires old file be user library, adds binaries from replacement file to new file, and makes new file a user library by calling LIBGEN. Overrides V parameter.</td></tr>
<tr><td>V</td><td>Calls VFYLIB after LIBEDIT processing.</td></tr>
<tr><td>Z</td><td>LIBEDIT command contains input directives.</td></tr>
</table>

If C, D, NR, Z, U, or V parameters are omitted, the indicated action does not occur.

The following parameters are common to several LIBEDIT directives.

name	Specifies record name.
rid	Specifies reference point for correction.

rid	Meaning
type/name	Reference record is of specified type; types are listed under *TYPE directive in this section.
name	Reference record is default type.
*	Reference point is EOF (*BEFORE only).

gid	Indicates records or groups of records to be inserted, deleted, or replaced.

gid	Meaning
type/name	Single record of specified type with specified name; types are listed under *TYPE directive in this section.
name	Record with specified name of default type.
$type_1/name_1$-$type_2/name_2$	Groups of records beginning with $name_1$ of $type_1$ and ending with $name_2$ of $type_2$, where $name_i$ is record identifier and $type_i$ is type of named record.
$type_1/name_1$-$name_2$	Records beginning with $name_1$ of $type_1$, ending with $name_2$ of $type_1$.

gid	Meaning
name$_1$-name$_2$	Records beginning with name$_1$ and ending with name$_2$ of default type.
type/name-*	All records of specified type beginning with named record.
name-*	All records of default type beginning with named record.
type/*	All records of specified type.
*	All records of default type.
0	Zero-length record inserted.

Directive	Description
*ADD lib,gid$_1$, gid$_2$,...,gid$_n$	Appends records to specified library lib for transcription to new library.
*AFTER or *A	Same as *INSERT.
*BEFORE rid,gid$_1$, gid$_2$,...,gid$_n$	Inserts records from current replacement file before specified old library record for transcription to new library file (*B also legal).
*BUILD name	Constructs and appends directory record in modify format to new library file. name specifies name of directory record.
*COMMENT rid comment	Adds comment to prefix table for program on replacement file or old library file.
*COPY	Copies new library file to old library file after processing corrections.
*DATE rid comment	Adds current date and specified comment (up to 40 characters) to prefix table.

Directive	Description
*DELETE gid_1, $gid_2,\ldots,gid_n$	Suppresses copying of specified records from old library file to new library file (*D also legal).
*FILE lfn	Declares secondary file lfn that contains replacement records.
*IGNORE gid_1, $gid_2,\ldots,gid_n$	Ignores records on current replacement file during record processing.
*INSERT rid,gid_1, $gid_2,\ldots,gid_n$	Inserts records from current replacement file after specified old library record for transcription to new library file (*I, *AFTER, and *A also legal).
*LIBGEN libname	Specifies that new file will be user library libname.
*LIST listfile, listopt	Changes list file and list option.
*NEW newfile	Specifies name of new file.
*NOINS	Prevents insertion of unreplaceable records at EOF of newfile.
*NOREP lfn_1, $lfn_2,\ldots,lfn_n$	Declares specified replacement files lfn_i to be no-replace files.
*NOREW	Prevents rewinding of old and new file before and after processing.
*OLD oldfile	Specifies name of oldfile.
*RENAME rid, name	Assigns new name to record on old library or current replacement file for transcription to new library file.
*REPLACE gid_1, $gid_2,\ldots,gid_n$	Replaces records on old library file with records of same name from current replacement file that has been declared no-replace file.
*REWIND lfn	Rewinds file lfn before and after editing.

Directive	Description
*TYPE type or *NAME type	Specifies default type of internal record format. If omitted, TEXT is assumed.

type	Meaning
ABS	Multiple entry point overlay.
CAP	CYBER loader capsule.
OPL	Modify OPL deck.
OPLC	Modify OPL common deck.
OPLD	Modify OPL directories.
OVL	CPU overlay program.
PP	PP program.
PPU	PPU program.
PROC	Procedure.
REL	Relocatable CPU program.
TEXT	Unrecognizable as a program.
ULIB	User library/ directory.
*VFYLIB	Verifies new file against old file after processing.

MODIFY,$p_1,p_2,\ldots,p_n$.

Edits a Modify-formatted program library file.

p_i	Description
A	Writes compressed compile file.
C=lfn_1	Writes compile output to file lfn_1 (default is COMPILE).
CB=lfn_2	Sets assembler argument B=lfn_2 (default is B=LGO).

p_i	Description
CG=lfn$_3$	Sets assembler argument G=lfn$_3$ (default is G=SYSTEXT).
CL=lfn$_4$	Sets assembler argument L=lfn$_4$ (default is L=OUTPUT).
CS=lfn$_5$	Sets assembler argument S=lfn$_5$ (default is S=SYSTEXT).
CV=cv	Sets character set to cv (63 or 64).
D	No abort on directive errors.
F	Modifies all decks.
I=lfn$_6$	Reads directive input from file lfn$_6$ (default is INPUT).
L=lfn$_7$	Lists output on file lfn$_7$ (default is OUTPUT).
LO=$c_1c_2 \ldots c_n$ †	Selects list options. List option E is selected when the list output file is assigned to the terminal. Otherwise, C, D, E, M, T, and W are selected.

c_i	Meaning
A	Active lines.
C	Directives other than INSERT, DELETE, RESTORE, MODNAME, I, or D.
D	Deck status.
E	Errors.
I	Inactive lines.
M	Modifications made.
S	Statistics.
T	Input text.
W	Compile file directives.

p_i	Description
N=lfn$_8$	Writes new program library on file lfn$_8$ (default is NPL).
NR	Does not rewind compile file.

---

† Multiple options can be selected for LO parameter (for example, LO=CEM).

p_i	Description
P=lfn_9	Takes program library input from file lfn_9. Default is OPL.
Q=processor	Sets LO=E and A parameter at beginning of run. Calls assembler or compiler specified by processor at end or run.
S=lfn_{10}	Writes source output on file lfn_{10} (default is SOURCE).
U	Modifies only decks on DECK directives.
X	Same as Q parameter, except rewinds input directives and output listing files before processing.
Z	Specifies that MODIFY command contains input directives.

OPLEDIT,p_1,p_2,...,p_n.

Removes modification decks and identifiers from Modify-formatted file.

p_i	Description
D	Debugs; ignore errors.
F	Modifies all decks.
I=lfn_1	Uses directive input from file lfn_1 (default is INPUT).
L=lfn_2	Lists output on file lfn_2 (default is OUTPUT).
LO=lo	Selects list options. List option E is selected when the list output file is assigned to the terminal; otherwise, C, D, E, M, and S are selected.

lo	Meaning
E	Errors.
C	Input directives.
M	Modifications made.
D	Deck status.
S	Directory statistics.

P_i	Description
M=lfn_3	Writes output from *PULLMOD directives on file lfn_3. If omitted, M=MODSETS is assumed.
N=lfn_4	Writes new program library on file lfn_4 (default is NPL).
P=lfn_5	Uses file lfn_5 for old program library (default is OPL).
U	Generates *EDIT directives for all decks; for *PULLMOD executions only. If omitted, *EDIT directives for common decks are generated.
U=0	Generates no *EDIT directives.
Z	Uses directive input following terminator in command; I=lfn is ignored.

NOTE

Do not put terminator after directives.

PROFILE,P_1,P_2,...,P_n.

Enables master user to update and inquire about project profile file for profile control.

P_i	Description
CN=cnum	Writes project numbers valid for charge number cn to output file (valid only with OP=I).
CV	Converts directives on input file from NOS 1.0 or 1.1 format to format for later version of NOS (valid only with OP=U or OP=T).
I=lfn_1	Reads input from file lfn_1 for update (default is INPUT).
L=lfn_2	Lists output on file lfn_2 (default is OUTPUT).

P_i	Description
LO=op	Specifies list option (valid only with OP=L).

op	Meaning
CM	Charge number list.
FM	Full list (default).
PM	Project number list.

P_i	Description
OP=opt	Specifies PROFILE processing option.

opt	Meaning
I	Inquire option.
L	List option (used with LO).
T	Interactive update.
U	Updates project profile file.

P_i	Description
P=lfn_3	Specifies file lfn_3 as project profile file (default is PROFILB).
PN=pn	Writes control values and valid user names for project number pn to output file (valid only with OP=I and CN=cn).

Directives used by master user in the following format add or update information on each charge number.

Directive	Description
/cn,dir_1, dir_2,..., dir_n	Specifies PROFILE directives dir_i for charge number cn. Begins in first column.

dir_i	Meaning
APN=pn	Adds or activates project number.
AUN=un	Adds user name.
CN=cn	Specifies charge number in any column.
DPN=pn	Deactivates project number.

dir_i	Meaning
DUN=un	Deletes user name.
ISV=x	Sets maximum SRU validation limit.
PEX=yymmdd	Specifies project number expiration date.
PN=pn	Specifies project number.
SMA=acc	Sets SRU master user accumulator.
SML=lim	Sets SRU master user limit register.
TI=ti	Specifies time of day before which you cannot use project number.
TO=to	Specifies time of day after which you cannot use project number.

UPDATE,p_1,p_2,...,p_n.

Edits, creates, or copies an Update-formatted program library file.

p_i	Description
A	Copies sequential old program library to new random program library.
B	Copies random old program library to sequential new program library.
C=lfn_1	Writes compile file output in order of program library on file lfn_1. If omitted, COMPILE file is assumed. If C=0, suppresses compile file output.
D	Defines compile output for 80-character lines; if omitted, columns of 72-character lines are assumed.
E	Edits old program library.
F	Selects full update mode.

<table>
<tr><th>p_i</th><th>Description</th></tr>
<tr><td>G=lfn_2</td><td>Writes output from PULLMOD on file lfn_2. If omitted, append output from PULIMOD to source file.</td></tr>
<tr><td>H=n</td><td>Specifies character set of program library.
<table>
<tr><th>n</th><th>Meaning</th></tr>
<tr><td>3</td><td>63-character set.</td></tr>
<tr><td>4</td><td>64-character set.</td></tr>
<tr><td>omitted</td><td>Character set indicated on old program library.</td></tr>
</table></td></tr>
<tr><td>I=lfn_3</td><td>Specifies input file lfn_3 (if omitted, file INPUT is assumed).</td></tr>
<tr><td>K=lfn_4</td><td>Writes compile file output decks in order of COMPILE directives on lfn_4. If lfn_4 is omitted, file COMPILE is assumed. If K is omitted, compile file output is determined by C parameter.</td></tr>
<tr><td>L=c_1c_2 $\ldots c_n$</td><td>Specifies content of output file. c_n is any A, F, and 0 through 9 list options. If omitted, for creation run, A, 1, and 2 options are assumed; for correction run, A, 1, 2, 3, and 4 options are assumed; for copy run, A and 1 options are assumed.
<table>
<tr><th>c_i</th><th>List Options</th></tr>
<tr><td>A</td><td>List deck names and correction set identifiers, COMDECK directives, definitions, and deck written on compile file.</td></tr>
<tr><td>F</td><td>Uses all except 0.</td></tr>
<tr><td>0</td><td>Suppresses all listing.</td></tr>
<tr><td>1</td><td>Lists lines in error.</td></tr>
<tr><td>2</td><td>Lists active Update directives.</td></tr>
<tr><td>3</td><td>Notes on each line that changed status during execution.</td></tr>
<tr><td>4</td><td>Lists text lines.</td></tr>
<tr><td>5</td><td>Lists active compile file directives.</td></tr>
</table></td></tr>
</table>

P_i	Description

c_i	List Options
6	Lists active and inactive lines.
7	Lists active lines.
8	Lists inactive lines.
9	Lists correction history of lines selected by 5, 7, and 8.

$M=lfn_5$	Specifies merge input file lfn_5. If lfn_5 is omitted, file MERGE is assumed.
$N=lfn_6$	Writes new program library on file lfn_6. If lfn_6 is omitted, file NEWPL is assumed. If omitted for correction run, suppresses new program library generation.
$O=lfn_7$	Writes output on file lfn_7. If lfn_7 is omitted, file OUTPUT is assumed.
$P=lfn_8/s_1/s_2/\ldots/s_7$	Specifies file lfn_8 as old program library. If lfn_8 is omitted, file OLDPL is assumed. Secondary old program libraries reside on files s_i. If omitted, no secondary old program libraries exist.
Q	Processes only decks on COMPILE directives.
$R=c_1c_2\ldots c_4$	Rewinds specified file before and after update. If R is omitted, rewinds all files.

c_i	Meaning
C	Compile.
N	New program library.
P	Old program library and merge library.
S	Source and PULLMOD.
omitted	Rewind no files.

p_i	Description
S=lfn$_8$	Writes source output on file lfn$_8$. If lfn$_8$ is omitted, file SOURCE is assumed. If S is omitted, suppresses source output unless selected by T parameter.
T=lfn$_8$	Writes source output excluding common decks on file lfn$_8$. If lfn$_8$ is omitted, file SOURCE is assumed. If T is omitted, suppresses source output unless selected by the S parameter.
U	Does not halt execution for fatal errors.
W	Specifies sequential format for new program library.
X	Writes compile file in compressed format.
8	Composes compile file output of 80-character line images. If omitted, 90-character line images are assumed.
*=char	Specifies master control character char.
/=char	Specifies comment control character char.

XEDIT,lfn$_1$,p$_1$,p$_2$,...,p$_n$.dds

Initiates XEDIT.

lfn$_1$	Name of file to be edited or created (default is primary file).
p_i	Optional parameters:

p_i	Meaning
AS	Processes file in ASCII mode. Upon exiting XEDIT, terminal is returned to mode in effect before editing session. If AS is omitted, mode that terminal is in before entering XEDIT command remains in effect.
B	Assumes job is of batch origin.

P_i	Meaning
C	Creates new file lfn$_1$.
FR	Takes first editing directive(s) from first line of file lfn$_1$.
I=lfn$_2$	Takes editing directive(s) from file lfn$_2$. If I=0, directive(s) are taken from dds field. If I is omitted, file INPUT is assumed.
L=lfn$_3$	Places XEDIT output on file lfn$_3$. If L=0, no output is generated. If L is omitted, file OUTPUT is assumed.
NH	Suppresses printing of the XEDIT header.
P	Retrieves and edits permanent file lfn$_1$.

dds	Delimited directive(s) sequence processed before XEDIT takes directive(s) from file INPUT or file lfn$_2$.

For further information, refer to the XEDIT Reference Manual.

PRODUCT SET COMMAND FORMATS 5

ALGOL5,p_1,p_2,...,p_n.comments or
ALGOL5.comments

Calls ALGOL 5 compiler.

<table>
<tr><th>p_i</th><th>Description</th></tr>
<tr><td>B=lfn</td><td>Binary output on file lfn.</td></tr>
<tr><td>B</td><td>Same as B=BIN.</td></tr>
<tr><td>B=0</td><td>No binary output.</td></tr>
<tr><td>B omitted</td><td>Same as B=LGO.</td></tr>
<tr><td>CD=cd †</td><td>Comment directives option.
<table>
<tr><th>cd</th><th>Options Honored</th></tr>
<tr><td>I</td><td>≠INCLUDE≠</td></tr>
<tr><td>L</td><td>≠LIST≠, ≠NOLIST≠, ≠EJECT≠</td></tr>
<tr><td>O</td><td>≠OBJLIST≠, ≠OBJNOLIST≠</td></tr>
<tr><td>S</td><td>≠CHECKON≠, ≠CHECKOFF≠</td></tr>
</table></td></tr>
<tr><td>CD omitted</td><td>No comment directives.</td></tr>
<tr><td>DB=db †</td><td>Debugging option.
<table>
<tr><th>db</th><th>Meaning</th></tr>
<tr><td>D</td><td>Information required for execution time symbolic dump included in object code.</td></tr>
<tr><td>DA</td><td>Same as DB=D, plus array elements.</td></tr>
<tr><td>P</td><td>Presets non-own variables at block entry to negative for real and integer and to true for Boolean.</td></tr>
</table></td></tr>
</table>

---

† Multiple options for CD and DB parameters are separated by slashes (for example, CD=I/S and DB=D/P).

<table>
<tr><th>P_i</th><th>Description</th></tr>
<tr><td></td><td><table><tr><th>db</th><th>Meaning</th></tr><tr><td>SB</td><td>Performs subscript bounds checking for arrays, regardless of ≠CHECKON≠ and ≠CHECKOFF≠ directives.</td></tr></table></td></tr>
<tr><td>DB omitted</td><td>No debugging options.</td></tr>
<tr><td>EL=el</td><td>Error level control.<table><tr><th>el</th><th>Meaning</th></tr><tr><td>C</td><td>List catastrophic errors.</td></tr><tr><td>F</td><td>List fatal errors plus level C errors.</td></tr><tr><td>T</td><td>List trivial errors plus level C, F, and W errors.</td></tr><tr><td>W</td><td>List warning errors plus level C and F errors.</td></tr></table></td></tr>
<tr><td>EL</td><td>Same as EL=F.</td></tr>
<tr><td>EL omitted</td><td>Same as EL=W.</td></tr>
<tr><td>ET=e</td><td>Compiler aborts if executable code contains errors of at least C, F, T, or W severity indicated by e. Levels are indicated by EL parameter. Job resumes after EXIT command.</td></tr>
<tr><td>ET</td><td>Same as ET=F.</td></tr>
<tr><td>ET=0</td><td>Next command in job is executed after termination, despite any errors detected during compilation.</td></tr>
<tr><td>ET omitted</td><td>Same as ET=C.</td></tr>
<tr><td>I=lfn</td><td>Source input on file lfn.</td></tr>
<tr><td>I</td><td>Same as I=COMPILE.</td></tr>
<tr><td>I omitted</td><td>Same as I=INPUT.</td></tr>
<tr><td>L=lfn</td><td>Listable compiler output on file lfn.</td></tr>
</table>

P_i	Description
L	Same as L=LIST.
L=0	Only fatal diagnostics listed on file OUTPUT.
L omitted	Same as L=OUTPUT.
LO=lo[†]	Listing options. lo[††] Meaning O Object and source listing. R Source listing and reference map. S Source listing only.
LO	Same as LO=R/S.
LO omitted	Same as LO=S.
N	Source input contains circumludes only.
N omitted	Source input contains program and separately compiled procedures only.
OPT=IS	Instruction scheduling performed.
OPT omitted	No extra optimizations performed.
PD=n	Print density control. n Meaning 6 Six lines per inch. 8 Eight lines per inch.
PD	Same as PD=8.
PD omitted	Same as PD=6.
PS=n	Output page size is n printable lines per page ($4 \leq n \leq 32768$).

[†] Multiple options for LO parameter are separated by slashes (for example, LO=O/S).

[††] Any option can be negated by prefixing it with minus sign.

Pi	Description
PS omitted	Same as PS=60 if PD=6; same as PS=80 if PD=8.
PW=n	Maximum of n characters in line of printed output ($50 \leq n \leq 136$).
PW omitted	Same as PW=72 if output file is terminal file; same as PW=126 if output is printer file.
RES	ALGOL symbols are recognized as reserved words and are delimited by blanks or ≠.
RES omitted	ALGOL symbols are delimited by ≠ character.
S=circ	Circumlude circ from library ALG5LIB is available during compilation.
S=lib-circ	Circumlude circ from library lib is available during compilation.
S omitted	Only standard circumlude is available for compilation.
SEQ	Input file in sequenced line format.
SEQ=0	Input file in unsequenced format.
SEQ omitted	Same as SEQ=0.
SGM	Special code provided to allow segmentation of program.
SGM omitted	No special code provided to allow segmentation of program.
SW=n	Columns 1 through n of each source line are compiled.
SW	Same as SW=80.
SW omitted	Same as SW=72.
V	Virtual arrays to be allocated in extended memory.
V omitted	Virtual arrays to be allocated in central memory.

APL,p_1,p_2,...,p_n.

Calls APL2 interpreter.

p_i	Description
I=lfn	Source input on file lfn.
I omitted	Same as I=INPUT.
L=lfn	Output on file lfn.
L=0	No APL output.
L omitted	Same as L=OUTPUT.
LO=b	Batch output options; any or all can be specified. b — Meaning E — Batch output echos input. P — Prohibits prompt. B — Inserts blank in first column of each output line.
LO=0	No batch output options.
LO omitted	Same as LO=0.
MN=mnfl	Set minimum field length mnfl.
MN omitted	System sets minimum field length.
MX=mxfl	Set maximum field length mxfl.
MX omitted	System sets maximum field length of 24576 words (60000 octal) or maximum allowed, whichever is less.
PW= password	Password to use another user's workspace.
PW omitted	No password.

<table>
<tr><th>P_i</th><th>Description</th></tr>
<tr><td>TT=tty</td><td>Terminal type.
<table>
<tr><th>tty</th><th>Meaning</th></tr>
<tr><td>COR</td><td>Correspondence APL terminal.</td></tr>
<tr><td>TYPE</td><td>Typewriter-pairing APL terminal.</td></tr>
<tr><td>BIT</td><td>Bit-pairing APL terminal.</td></tr>
<tr><td>ASCAPL</td><td>Used when system translates APL codes into standard intermediate code.</td></tr>
<tr><td>TTY33</td><td>Teletype 33 terminal.</td></tr>
<tr><td>ASCII</td><td>Full ASCII terminal not equipped to print APL character set. Also used for non-APL correspondence terminal.</td></tr>
<tr><td>BATCH</td><td>Devices that support ASCII graphic 64-character set such as local and remote batch ASCII printer.</td></tr>
<tr><td>TTB501</td><td>Batch printer.</td></tr>
<tr><td>TT383</td><td>Teletype 38 terminal.</td></tr>
<tr><td>713</td><td>Full ASCII terminal.</td></tr>
</table></td></tr>
<tr><td>TT omitted</td><td>If job was entered from interactive terminal, same as TT=ASCAPL. If job was entered from batch or remote batch, same as TT=BATCH.</td></tr>
<tr><td>UN=usernum</td><td>User name of initial workspace.</td></tr>
<tr><td>UN omitted</td><td>User name of initial workspace specified to be same number used to sign on.</td></tr>
<tr><td>WS=wsname</td><td>wsname is active workspace.</td></tr>
<tr><td>WS omitted</td><td>Clear workspace is used.</td></tr>
</table>

BASIC,p_1,p_2,...,p_n.

Calls BASIC 3 compiler.

p_i	Description
AS	Source program and data encoded in extended ASCII character set.
AS=0	Only normal (non-ASCII) characters contained in source program and data files.
AS omitted	Same as AS=0.
B=lfn	Binary output on file lfn.
B	Same as B=BIN.
B=0	Compilation specified to memory; no binary output file.
B omitted	Same as B=0.
BL	Separable output listing generated.
BL omitted	Listings generated in compact form.
DB=db [†]	CYBER Interactive Debug and trace control.

db [††]	Meaning
B	Force binary generation and/or program execution.
DL	Activate program tracing as controlled by REM TRACE debug lines.
ID	Generate CYBER Interactive Debug information. Same as DB=B/DL/ID.
TR	Trace all statements regardless of REM TRACE debug lines.

DB	Same as DB=B/DL.

[†] Multiple options for the DB parameter are separated by slashes (for example, DB=B/DL).

[††] Insert 0/ before option to turn off default or previously specified value.

Pi	Description
DB=0	CYBER Interactive Debug and trace feature not activated.
DB omitted	Same as DB=0, except that CYBER Interactive Debug is activated if DEBUG or DEBUG(ON) command was issued previously.
E=lfn	Compiler error diagnostics on file lfn.
E	Same as E=ERRS.
E omitted	Compiler error diagnostics on file specified by L parameter. If L=0, they are written on file OUTPUT.
EL=el	Error level control; errors are listed on file specified by E parameter.

el	Meaning
F	List fatal compiler diagnostics.
W	List warning diagnostics and fatal compiler diagnostics.

Pi	Description
EL omitted	Same as EL=W.
GO	Compiled BASIC program executed.
GO=0	Execution prohibited.
GO omitted	Compiled-to-memory code executed; binary output (B parameter specified) not generated.
I=lfn	Source input on file lfn.
I	Same as I=COMPILE.
I omitted	Same as I=INPUT.
J=lfn	Execution time input on file lfn.
J	Same as J=INPUT.
J=0	No execution time input file.

P_i	Description
J omitted	Same as J=INPUT.
K=lfn	Execution output on file lfn.
K	Same as K=OUTPUT.
K omitted	Same as K=OUTPUT.
L=lfn	Listable compiler output on file lfn.
L	Same as L=OUTPUT.
L=0	No listable compiler output generated.
L omitted	For batch origin jobs, same as L=OUTPUT. For interactive origin jobs, same as L=0.
LO=lo[†]	Listing options; listing on file specified by L parameter.

lo	Meaning
O	Object code and source listing.
S	Source listing.
O/O	Object code listing.

P_i	Description
LO	Same as LO=S.
LO=0	No list options selected.
LO omitted	Same as LO=S.

[†] Multiple options for the LO parameter are separated by slashes (for example, LO=O/S).

<table>
<tr><th>P_i</th><th>Description</th></tr>
<tr><td>PD=n</td><td>Print density control for files specified by K and L parameters.
<table>
<tr><th>n</th><th>Meaning</th></tr>
<tr><td>6</td><td>Six lines per inch.</td></tr>
<tr><td>8</td><td>Eight lines per inch.</td></tr>
</table></td></tr>
<tr><td>PD</td><td>Same as PD=8.</td></tr>
<tr><td>PD omitted</td><td>Print density is installation default.</td></tr>
<tr><td>PS=n</td><td>Page size for file specified by L parameter is n printable lines per page ($4 \le n \le 32768$).</td></tr>
<tr><td>PS omitted</td><td>If PD is omitted or specifies print density default, page size is installation default.
If PD specifies a nondefault print density, page size is calculated by:
PS=PD*(default PS)/(default PD)</td></tr>
</table>

COBOL5,p_1,p_2,...,p_n.

Calls COBOL 5 assembler.

P_i	Description
ANSI=s	Non-ANSI language extensions treated as errors with severity specified by s. s — Meaning F — Fatal error. T — Trivial error.
ANSI	Same as ANSI=T.
ANSI omitted	Non-ANSI extensions allowed.
ANSI=NO EDIT	Requests strict ANSI interpretation; not edited by DISPLAY command.
ANSI=77LEFT	Causes level 77 items to be stored SYNC LEFT. If not specified, items stored SYNC RIGHT.
ANSI=AUDIT	Selects ANSI=NOEDIT and ANSI=77LEFT parameters.
APO	Nonnumeric literal delimiter is ASCII apostrophe character (display code value of 70).
APO omitted	Nonnumeric literal delimiter is quotation mark (display code value of 64).
B=lfn	Binary output on file lfn.
B	Same as B=BIN.
B=0	No binary output.
B omitted	Same as B=LGO.
BL	Separable output listing generated.
BL omitted	Listings generated in compact form.
CC1	Computational data items stored and processed as computational-1 items.

p_i	Description
CCl omitted	Computational data items stored and processed as computational items.
D=lfn	Subschema for CYBER database control system (CDCS) interface on file lfn.
D	Subschema for CDCS interface on file whose name is that of the subschema.
D=0	Subschema for CDCS interface not used.
D omitted	Same as D=0.
DB=db†	Debugging options.

db	Meaning
B	Binary output generated regardless of errors in source.
DL	Debugging lines (D in column 7) in source compiled as executable code.
ID	Debug tables produced with CID features.
RF	Code compiled so that reference modification values are checked to ensure values are within bounds of item being reference modified.
SB	Subscript and index references checked during execution to ensure that all references to tables are within table bounds.
TR	Paragraph trace during execution.

DB	Same as DB=B/DL/SB.
DB=0	No debugging options selected.
DB omitted	Same as DB=0.

---

†Multiple options for DB parameter are separated by slashes (for example, DB=DL/SB).

<table>
<tr><th>p_i</th><th>Description</th></tr>
<tr><td>E=lfn</td><td>Error information specified by EL parameter on file lfn.</td></tr>
<tr><td>E</td><td>Same as E=ERR.</td></tr>
<tr><td>E=0</td><td>Same as E=OUTPUT.</td></tr>
<tr><td>E omitted</td><td>Same as E=OUTPUT.</td></tr>
<tr><td>EL=el</td><td>Error level control; errors are listed on file specified by E parameter.
<table>
<tr><th>el</th><th>Meaning</th></tr>
<tr><td>C</td><td>List catastrophic errors.</td></tr>
<tr><td>F</td><td>List fatal errors plus level C errors.</td></tr>
<tr><td>T</td><td>List trivial errors plus level C, F, and W errors.</td></tr>
<tr><td>W</td><td>List warning errors plus level C and F errors.</td></tr>
</table></td></tr>
<tr><td>EL</td><td>Same as EL=F.</td></tr>
<tr><td>EL omitted</td><td>Same as EL=W.</td></tr>
<tr><td>ET=opt</td><td>Compiler aborts if executable code contains errors of at least C, F, T, or W severity indicated by e. Levels are indicated by the EL parameter. Job resumes after EXIT command.</td></tr>
<tr><td>ET omitted</td><td>Next command in job is executed after termination, despite any errors detected during compilation.</td></tr>
<tr><td>FDL=lfn</td><td>Fast dynamic loader processing available; FDL file is lfn.</td></tr>
<tr><td>FDL</td><td>Same as FDL=FDLFILE.</td></tr>
<tr><td>FDL omitted</td><td>Fast dynamic loader processing not available.</td></tr>
<tr><td>FIPS</td><td>Equal to FIPS=4.</td></tr>
<tr><td>FIPS=n</td><td>Language features above Federal Information Processing Standard (FIPS) level n diagnosed ($1 \le n \le 4$).</td></tr>
</table>

p_i	Description
FIPS omitted	No diagnostics for FIPS levels issued.
I=lfn	Source input on file lfn.
I	Same as I=COMPILE.
I omitted	Same as I=INPUT.
L=lfn	Listable compiler output on file lfn.
L	Same as L=LIST.
L=0	No listable compiler output generated.
L omitted	Same as L=OUTPUT.
LBZ	Leading blanks in numeric fields treated as zeros in arithmetic statements and comparisons.
LBZ omitted	Numeric fields containing blanks are in error.
LO=lo†	Listing options.

lo	Meaning
M	A map that correlates program entities and attributes such as data class, size, and physical storage.
O	Generated object code with COMPASS mnemonics.
R	Cross-reference of program entities and locations of definitions and use within the program.
S	Source program.
-S	Source program not listed.

LO	Same as LO=M/R/S.
LO=0	No list options selected.

---

† Multiple options for the LO parameter are separated by slashes (for example, LO=O/S).

P_i	Description
LO omitted	Same as LO=S.
MSB	Program compiled as a subroutine that includes COBOL initiation.
MSB omitted	Normal program compiled.
PD=pd	Print density control for E and L parameter listings.

pd	Meaning
3	Double space at six lines per inch.
4	Double space at eight lines per inch.
6	Single space at six lines per inch.
8	Single space at eight lines per inch.

P_i	Description
PD	Same as PD=8.
PD omitted	Same as PD=6.
PS=n	Output page size is n printable lines per page.
PS omitted	Page size is calculated by: PS=PD*10.
PSQ	Sequence numbers in columns 1 through 6 used for diagnostics.
PSQ omitted	Compiler-generated sequence numbers used for diagnostics; sequence numbers in columns 1 through 6 not processed.
PW=n	Maximum of n characters in line of printed output.
PW	Same as PW=72.
PW omitted	Same as PW=132.
SB	Program compiled as a subprogram.

P_i	Description
SB omitted	Program compiled as a main program.
SORT4	Sort/Merge Version 4 used for all SORT and MERGE commands.
SORT4 omitted	Sort/Merge Version 4 is default.
SORT5	Sort/Merge Version 5 used for all SORT and MERGE commands.
SORT5 omitted	Sort/Merge Version 4 is default.
SY	Source program checked for syntax but executable code not generated.
SY omitted	Source compiled and executable code generated.
TAF	Program run as NOS Transaction Facility (TAF) task.
TAF omitted	Program run in non-TAF environment.
TDF=lfn	Termination dump to be taken; tables needed for dump written on file lfn.
TDF	Same as TDF=TDFILE.
TDF omitted	Termination dump not taken from this compilation.
U=lfn	COMPASS line images of generated program written on file lfn in format acceptable for Update utility.
U	Same as U=COMPS.
U=0	COMPASS assembly language images not produced.
U omitted	Same as U=0.
UC1	Computational-1 items converted to integer format before processing.
UC1 omitted	Computational-1 items processed in Computational-1 format.

P_i	Description
X=lfn	Update random program library containing text for COPY statements on file lfn.
X	Same as X=NEWPL.
X=0	Same as X=OLDPL.
X omitted	Same as X=OLDPL.

COMPASS,p_1,p_2,...,p_n.

Calls COMPASS assembler.

p_i	Description
A	Abort job step at end of run if assembly errors are detected.
A omitted	Do not abort job step for assembly errors.
B=lfn	Binary output on file lfn.
B	Same as B=LGO.
B=0	No binary output.
B omitted	Same as B=LGO.
BL	Generates output listing that is easily separable by issuing page ejects between listing segments.
BL=0	Generates listing in compact format. Page parity and page ejects are suppressed.
BL omitted	Same as BL=0.
D	Assembly errors do not inhibit object code written to file specified by B parameter.
D omitted	Assembly errors inhibit object code.
E=lfn	Error list on file lfn.
E	Same as E=ERRS.
E=0	No error list.
E omitted	Same as E=OUTPUT.
F=name or number	Sets COMPASS*F symbol based on language procession name or number given:

name	number
COMPASS	0
FTN	2
FTN5	3

Pi	Description
F	Same as F=0
F omitted	Same as F=0.
G=lfn	First system text overlay loaded from file lfn.
G=lfn/ovl	First system text overlay with name ovl loaded from file lfn.
G	Same as G=SYSTEXT.
G=0	No system text loaded.
G omitted	Same as G=0.
I=lfn	Source input on file lfn.
I	Same as I=COMPILE.
I omitted	Same as I=INPUT.
L=lfn	Listable assembler output on file lfn.
L	Same as L=OUTPUT.
L=0	No full list.
L omitted	Same as L=OUTPUT.
LO=lo	Listing options:

lo	Meaning
A	List statements actually assembled.
B	List binary statements.
C	List statements.
D	Include details.
E	Include echoed lines.
F	List IF-skipped lines.
B	List binary statements.
C	List statements.
D	Include details.

Pi	Description	
	lo	Meaning
	E	Include echoed lines.
	F	List IF-skipped lines.
	G	List generated code.
	L	List master list control.
	M	List macros and opdefs.
	N	List nonreferenced symbols.
	R	Accumulate and list references.
	S	List system macros and opdefs.
	T	List nonreferenced system symbols.
	X	List XTEXT lines.
	$$$$	Select all options.
LO	Same as LO=CFGX.	
LO=0	Same as LO=BLNR.	
LO omitted	Same as LO=0.	
ML=nnnnnnnnn	nnnnnnnnn is value of MODLEVEL micro.	
ML	Current date in form yyddd used for MODLEVEL micro.	
ML omitted	Same as ML.	
N	Suppress page ejects caused by normal listing control.	
N omitted	Do not suppress page ejects.	
O=lfn	Short list output on file lfn.	
O	Same as O=OUTPUT.	
O=0	No short list output.	
O omitted	Same as O=OUTPUT.	

P_i	Description
P	Page numbering proceeds continually from subprogram to subprogram.
P omitted	Page numbering begins at 1 for each subprogram.
PC=string	String padded with blanks (up to 30 characters) is value of PCOMMENT micro.
PC	Value of PCOMMENT micro equals 30 blanks.
PC omitted	Same as PC.
PD=n	Print density control for compiler listing. n — Meaning 6 — Six lines per inch. 8 — Eight lines per inch.
PD	Same as PD=8.
PD omitted	Print density default is determined by site.
PS=X	Page size X lines per page; $4 \le X \le 99$.
PS omitted	Page size default is determined by site.
S=ovl	System text overlay, ovl, loaded from library set.
S=lib/ovl	System text overlay, ovl, loaded from user library file or system library, lib.
S=0	System text file not loaded.
S	Same as S=SYSTEXT.
S omitted	If no G parameters other than G=0, same as S=SYSTEXT.
X=lfn	External test for XTEXT pseudo-instruction on file lfn.
X	Same as X=OPL.
X omitted	Same as X=OLDPL.

DEBUG,p.

Activates or terminates CYBER Interactive Debug Facility.

Pi	Description
OFF	Debug mode terminated.
ON	Debug mode activated. Default.
RESUME	Debug session suspended by last execution of SUSPEND command is resumed.

$FTN,p_1,p_2,\cdots,p_n.$

Calls FORTRAN Extended Version 4 compiler.

p_i	Description
A	Abort job step if fatal compilation error occurs.
A=0	Control transfers to next command, regardless of installation default, if fatal compilation errors occur.
A omitted	Same as A=0.
B=lfn	Binary output on file lfn.
B	Same as B=LGO.
B=0	No binary output.
B omitted	Same as B=LGO.
BL	Separable output listing generated.
BL=0	Listings generated in compact format.
BL omitted	Same as BL=0.
C	COMPASS assembler used for symbolic object code.
C=0	FORTRAN internal assembler selected regardless of installation default.
C omitted	Same as C=0.
D=lfn	Debug input obtained from file lfn.
D	Same as D=INPUT. OPT=0 and T options selected.
D=0	Debug statements ignored.
D omitted	Same as D=0.
DB	CYBER Interactive Debug Facility turned on; line number table and symbol table generated. TS option selected.
DB=ID	Same as DB.

Pi	Description
DB=0	No debug tables generated; CYBER Interactive Debug Facility turned off if DEBUG statement turned it on.
DB omitted	Same as DB=0.
E=lfn	Object code on file lfn output as COMPASS statement images for input to Update or Modify.
E	Same as E=COMPS.
E=0	Normal binary object file generated.
E omitted	Same as E=0.
EL=el	Error level control.

el	Meaning
A	List fatal and non-ANSI. List informative for OPT=0, 1, or 2. List notes and warnings for TS mode.
F	List fatal.
I	List fatal and informative for OPT=0, 1, or 2. List notes, fatal, and warnings for TS mode.
N	List fatal. List notes and warnings for TS mode.
W	List fatal. List warnings for TS mode.

Pi	Description
EL omitted	Same as EL=I.
ER	Code for object time reprieve included.
ER=0	No object time reprieve code included.
ER omitted	Same as ER if in TS or OPT=0 mode. Same as ER=0 if OPT=1 or 2.
G=lfn	First system text overlay loaded from file lfn.
G=lfn/ovl	First system text overlay with name ovl loaded from file lfn.

Pi	Description
G	Same as G=SYSTEXT.
G=0	No system text loaded.
G omitted	Same as G=0.
GO	Binary loaded and executed after compilation.
GO=0	Binary not loaded and executed.
GO omitted	Same as GO=0.
I=lfn	Source input on file lfn.
I	Same as I=COMPILE.
I omitted	Same as I=INPUT.
L=lfn	Listable compiler output (BL, EL, OL, R, and SL options) on file lfn.
L	Same as L=OUTPUT.
L=0	Only fatal diagnostics and statements that caused them listed on file OUTPUT.
L omitted	Same as L=OUTPUT.
LCM=m	Address mode for level 3 (extended memory) data.

m	Meaning
D	Direct mode; select 17-bit address.
I	Indirect mode; select 21-bit address.

Pi	Description
LCM	Same as LCM=D.
LCM omitted	Same as LCM=D.
ML=nnn	nnn is value of MODLEVEL micro.
ML	Current date in form yyddd used for MODLEVEL micro.

<table>
<tr><th>Pi</th><th>Description</th></tr>
<tr><td>ML omitted</td><td>Same as ML.</td></tr>
<tr><td>OL</td><td>Object code listed on file specified by L parameter.</td></tr>
<tr><td>OL=0</td><td>Object code not listed.</td></tr>
<tr><td>OL omitted</td><td>Same as OL=0.</td></tr>
<tr><td>OPT=n</td><td>Level of optimization.
<table>
<tr><th>n</th><th>Meaning</th></tr>
<tr><td>0</td><td>Fast compilation. T and ER options selected.</td></tr>
<tr><td>1</td><td>Standard compilation and execution.</td></tr>
<tr><td>2</td><td>Fast execution.</td></tr>
</table>
</td></tr>
<tr><td>OPT</td><td>Same as OPT=2.</td></tr>
<tr><td>OPT omitted</td><td>Same as OPT=1.</td></tr>
<tr><td>P</td><td>Page numbering proceeds continually from subprogram to subprogram.</td></tr>
<tr><td>P=0</td><td>Page numbering begins at 1 for each subprogram.</td></tr>
<tr><td>P omitted</td><td>Same as P=0.</td></tr>
<tr><td>PD=n</td><td>Print density control for compiler listings.
<table>
<tr><th>n</th><th>Meaning</th></tr>
<tr><td>6</td><td>Six lines per inch.</td></tr>
<tr><td>8</td><td>Eight lines per inch.</td></tr>
</table>
</td></tr>
<tr><td>PD</td><td>Same as PD=8.</td></tr>
<tr><td>PD omitted</td><td>Same as PD=6.</td></tr>
<tr><td>PL=n</td><td>n is maximum number of execution time records written on file OUTPUT. $n \le 9999999$ or $n \le 777777_8$.</td></tr>
<tr><td>PL omitted</td><td>Same as PL=5000.</td></tr>
</table>

Pi	Description
PMD	Enables postmortem dump.
PMD=0	Disables postmortem dump.
PMD omitted	Same as PMD=0.
PS=n	Compiler output page size is n printable lines per page.
PS omitted	Same as PS=60 if PD=6; same as PS=80 if PD=8.
PW=n	Maximum of n characters in line of printed output.
PW	Same as PW=72.
PW omitted	Same as PW=126 if output goes to printer; same as PW=72 if output goes to terminal.
Q	Quick mode; full syntactic scan performed. Object code suppressed.
Q=0	Normal compilation.
Q omitted	Same as Q=0.
R=n	Reference map options.

n	Meaning
0	No map.
1	Short map.
2	Long map.
3	Long map with common block and equivalence groups.

R	Same as R=2.
R omitted	Same as R=1.
ROUND=op	In-line code computation for indicated operations rounded. op = + - * / (multiple options allowed).
ROUND	Same as ROUND = + - * /.
ROUND=0	Computation not rounded.

P_i	Description
ROUND omitted	Same as ROUND=0.
S=ovl	System text overlay, ovl, loaded from library set when COMPASS is called to assemble intermixed COMPASS programs.
S=lib/ovl	System text overlay, ovl, loaded from user library file or system library, lib.
S	Same as S=SYSTEXT.
S=0	System text file not loaded, when COMPASS is called to assemble intermixed COMPASS programs.
S omitted	Same as S=SYSTEXT if G=0; same as S=0 if G=0.
SEQ	Source file in sequenced line format. TS option selected.
SEQ=0	Source file in standard FORTRAN format.
SEQ omitted	Same as SEQ=0.
SL	Source program on file specified by L parameter.
SL=0	No source program listed.
SL omitted	Same as SL.
STATIC	Dynamic memory management at execution time by CRM inhibited.
STATIC=0	Dynamic memory management used at execution time by CRM.
STATIC omitted	Same as STATIC=0.
SYSEDIT	I/O references done indirectly through table search at object time.
SYSEDIT=0	I/O references done directly.
SYSEDIT omitted	Same as SYSEDIT=0.

p_i	Description
T	Full error traceback.
T=0	No error traceback.
T omitted	Same as T=0.
TS	Interactive mode; compilation speed and field length optimized.
TS omitted	Same as OPT=1.
UO	Compiler can perform potentially unsafe optimizations; ignored unless OPT=2 specified.
UO=0	Unsafe optimization not performed.
UO omitted	Same as UO=0.
X=lfn	External text for XTEXT pseudo instruction on file lfn.
X	Same as X=OPL.
X omitted	Same as X=OLDPL.
Z	Zero-word parameter list passed.
Z=0	Zero-word parameter list not passed.
Z omitted	Same as Z=0.

FTN5,p_1,p_2,...,p_n.

Calls FORTRAN 5 compiler.

Pi	Description	
ANSI=s	Non-ANSI language extensions treated as errors with severity specified by s.	
	s	Meaning
	F	Fatal error.
	T	Trivial error.
ANSI	Same as ANSI=T.	
ANSI=0	Non-ANSI extensions allowed.	
ANSI omitted	Same as ANSI=0.	
ARG=arg	Format of external procedure argument lists generated by compiler.	
	arg	Meaning
	COMMON	Specify interlanguage communication format.
	-COMMON	Reverse specification of interlanguage communication format.
	FIXED	Specify that all references have same number of arguments.
	-FIXED	Reverse specification that all references have same number of arguments.
ARG=0	Same as ARG = -COMMON/-FIXED.	
ARG	Same as ARG = -COMMON/FIXED.	
ARG omitted	Same as ARG=0.	
B=lfn	Binary output on file lfn.	
B=0	No binary output.	
B	Same as B=BIN.	

P_i	Description
B omitted	Same as B=LGO.
BL	Separable output listing generated.
BL=0	Listings generated in compact format.
BL omitted	Same as BL=0.
CS=USER	User-specified weight table.
CS=FIXED	Fixed weight table.
CS	Same as CS=FIXED.
CS omitted	Same as CS=USER.
DB=db †	Debugging options.

db	Meaning
ER	Enable error recovery.
ID	Turn on CYBER Interactive Debug Facility; generate line number table, symbol table, and special object code.
PMD	Enable postmortem dump.
SB	Check that array element references are within array.
SL	Check that substring references are within string.
ST	Same as DB=ID, except do not generate special object code.
TB	Enable full error traceback.

DB=0	No debugging options.
DB	Same as DB=ER/PMD/SB/SL/TB.
DB omitted	Same as DB=0.

---

† Multiple option for DB parameter are separated by slashes (for example, DB=ER/ID).

Pi	Description		
DO=do †	DO loop control.		
		do	Meaning
		LONG	Permit trip count to exceed 131071.
		OT	Set minimum trip count to 1.
DO=0	Trip count less than 131071 and minimum defaults to zero.		
DO	Same as DO=OT.		
DO omitted	Same as DO=0.		
DS	Treat C$ directives as comments.		
DS=0	Recognize and process C$ directives.		
DS omitted	Same as DS=0.		
E=lfn	Error line and diagnostics on file lfn.		
E	Same as E=ERRS.		
E omitted	Same as E=OUTPUT.		
EL=el	Error level control.		
		el	Meaning
		C	List catastrophic errors.
		F	List fatal errors plus level C errors.
		T	List trivial errors plus level C, F, and W errors.
		W	List warning errors plus level C and F errors.
EL	Same as EL=F.		
EL omitted	Same as EL=T.		

---

† To select both options for the DO parameter, separate them with slashes (for example, DO=LONG/OT).

Pi	Description
ET=e	Compiler aborts the job step if executable code contains errors of at least C, F, T, or W severity indicated by e. Levels are indicated by EL parameter.
ET=0	Next command in job is executed after termination, despite any errors detected during compilation.
ET	Same as ET=F.
ET omitted	Same as ET=0.
G=lfn	First system text overlay loaded from file lfn.
G=lfn-recname	First system text overlay with record recname loaded on file lfn.
G=0	No system text loaded.
G	Same as G=SYSTEXT.
G omitted	Same as G=0.
GO	Binary loaded and executed after compilation.
GO=0	Binary not loaded and executed after compilation.
GO omitted	Same as GO=0.
I=lfn	Source input on file lfn.
I	Same as I=COMPILE.
I omitted	Same as I=INPUT.
L=lfn	Listable compiler output on file lfn.
L=0	Only fatal diagnostics and statements that caused them listed on file OUTPUT.
L	Same as L=LIST.
L omitted	Same as L=OUTPUT.

<table>
<tr><th>p_i</th><th>Description</th></tr>
<tr><td>LCM=m</td><td>Address mode for level 3 (extended memory) data.
<table>
<tr><th>m</th><th>Meaning</th></tr>
<tr><td>D</td><td>Direct mode; select 17-bit address.</td></tr>
<tr><td>G</td><td>Giant mode.</td></tr>
<tr><td>I</td><td>Indirect mode; select 21-bit address.</td></tr>
</table></td></tr>
<tr><td>LCM</td><td>Same as LCM=I.</td></tr>
<tr><td>LCM omitted</td><td>Same as LCM=D.</td></tr>
<tr><td>LO=op[†]</td><td>Listing options.
<table>
<tr><th>op</th><th>Meaning</th></tr>
<tr><td>A</td><td>Write variables and common blocks with their attributes to output file.</td></tr>
<tr><td>M</td><td>Write map to output file.</td></tr>
<tr><td>O</td><td>Write object code to output file.</td></tr>
<tr><td>R</td><td>Write errors reference listing to output file.</td></tr>
<tr><td>S</td><td>Write source listing to output file.</td></tr>
</table></td></tr>
<tr><td>LO</td><td>Same as LO=A/R/S.</td></tr>
<tr><td>LO=0</td><td>No listing.</td></tr>
<tr><td>LO omitted</td><td>Same as LO=A/S.</td></tr>
<tr><td>ML=str</td><td>str is value of MODLEVEL micro. str is from one to seven alphanumeric characters.</td></tr>
<tr><td>ML=0</td><td>Current date in form yyddd used for MODLEVEL micro.</td></tr>
<tr><td>ML</td><td>Same as ML=0.</td></tr>
</table>

[†] Multiple options for LO parameter are separated by slashes (for example, LO=O/S).

<table>
<tr><th>P_i</th><th>Description</th></tr>
<tr><td>ML
omitted</td><td>Same as ML=0.</td></tr>
<tr><td>OPT=n</td><td>Level of optimization.
<table>
<tr><th>n</th><th>Meaning</th></tr>
<tr><td>0</td><td>Fast compilation.</td></tr>
<tr><td>1</td><td>Standard compilation and execution.</td></tr>
<tr><td>2</td><td>Fast execution.</td></tr>
<tr><td>3</td><td>Fast execution plus potentially unsafe optimization.</td></tr>
</table></td></tr>
<tr><td>OPT</td><td>Same as OPT=2.</td></tr>
<tr><td>OPT
omitted</td><td>Same as OPT=0.</td></tr>
<tr><td>PD=n</td><td>Print density control for compiler listings.
<table>
<tr><th>n</th><th>Meaning</th></tr>
<tr><td>6</td><td>Six lines per inch.</td></tr>
<tr><td>8</td><td>Eight lines per inch.</td></tr>
</table></td></tr>
<tr><td>PD</td><td>Same as PD=8.</td></tr>
<tr><td>PD
omitted</td><td>Same as PD=6.</td></tr>
<tr><td>PL=n</td><td>n is the maximum number of execution time records written on file OUTPUT. n≤9999999999.</td></tr>
<tr><td>PL</td><td>Same as PL=50000.</td></tr>
<tr><td>PL
omitted</td><td>Same as PL=5000.</td></tr>
<tr><td>PN</td><td>Page numbering proceeds continuously from subprogram to subprogram.</td></tr>
<tr><td>PN=0</td><td>Page numbering begins at 1 for each subprogram.</td></tr>
<tr><td>PN
omitted</td><td>Same as PN=0.</td></tr>
<tr><td>PS=n</td><td>Compiler output page size is n printable lines per page.</td></tr>
</table>

Pi	Description
PS omitted	Same as PS=60 if PD=6; same as PS=80 if PD=8.
PW=n	Maximum of n characters in line of printed output ($50 \le n \le 136$).
PW	Same as PW=72.
PW omitted	Same as PW=136. For L or Efile, PW=72.
QC	Quick mode; full syntactic scan performed. Object code suppressed.
QC=0	Normal compilation.
QC omitted	Same as QC=0.
REW=lfn[†]	Rewind specified files before compilation.

lfn	Meaning
B	Binary output file.
E	Error file.
I	Input file.
L	Output file.

Pi	Description
REW	Same as REW=B/I.
REW=0	Do not rewind any files.
REW omitted	Same as REW=0.
ROUND=s[††]	In line code computation for indicated operations rounded.

s	Meaning
A	Addition.
S	Subtraction.
M	Multiplication.
D	Division.

[†] Multiple options for REW parameter are separated by slashes (for example, REW=I/B).

[††] Multiple options for ROUND parameter are separated by slashes (for example, ROUND=A/S).

Pi	Description
ROUND	Same as ROUND=A/S/M/D.
ROUND=0	Computation not rounded.
ROUND omitted	Same as ROUND=A/S/M.
S=sname†	System text overlay, sname, loaded from library set when COMPASS is called to assemble intermixed COMPASS programs.
S=lib/ sname	System text overlay, sname, loaded from user library file or system library, lib.
S=0	System text overlay not loaded when COMPASS is called to assemble intermixed COMPASS programs.
S	Same as S=SYSTEXT if G parameter is not specified. Same as S=0 if G parameter is specified.
S omitted	Same as S.
SEQ	Source file in sequenced line format.
SEQ=0	Source file in standard FORTRAN format.
SEQ omitted	Same as SEQ=0.
X=lfn	COMPASS assembler reads external text from file lfn.
X	Same as X=OPL.
X omitted	Same as X=OLDPL.

---

† Multiple names can be specified by separating them with slashes; up to maximum of seven names.

F45,p_1,p_2,...,p_n.

Calls Conversion Aid Program for FORTRAN Extended Version 4 to FORTRAN Version 5.

p_i	Description
CC=*	Change $ indicating a comment line to *.
CC=C	Change $ indicating a comment line to C.
CC	Same as CC=*.
CC omitted	Same as CC=C.
CI=idname	Generate Update/Modify directive *IDENT idname where idname is correction identifier.
CI	Generate Update/Modify directive *IDENT dddhhmm where ddd is number of day of year, hh is hour of day, and mm is minutes.
CI=0	Do not generate an *IDENT directive, even if LO=M, LO=F, PO=M, or PO=F is specified.
CI omitted	Same as CI.
DD	Delete statements with C$ in columns 1 and 2.
DD=0	Convert statements with C$ in columns 1 and 2 to comments by replacing $ with a blank.
DD omitted	Same as DD.
ET	Skip to job's EXIT statement if one of following conditions exist: • FORTRAN syntax errors. • Statements requiring manual action.

P_i	Description
	• Requests for Update/Modify output files when input is not on COMPILE file.
ET=0	Terminate normally.
ET omitted	Same as ET=0.
I=lfn	Source input on file lfn.
I	Same as I=COMPILE.
I omitted	Same as I=INPUT.
L=lfn	Listable output on file lfn.
L	Same as L=LIST.
L=0	No output listing.
L omitted	Same as L=OUTPUT.
LO=lo	Listing options. lo — Meaning E — Error listing. F — Full listing. M — Modification listing. S — Short listing.
LO	Same as LO=F.
LO omitted	Same as LO=S.
MC=$char$	Master control character is char.
MC	Same as MC omitted.
MC omitted	Same as MC=$*$.
MD	Flag statements containing machine-dependent usages.
MD omitted	Ignore machine-dependent usages.

Pi	Description
P=lfn	Source output on file lfn.
P	Same as P=PUNCH.
P=0	No source output.
P omitted	Same as P=0.
PD=n	Print density control for compiler listings. n Meaning 6 Six lines per inch. 8 Eight lines per inch.
PD	Same as PD=8.
PD omitted	Same as PD=6.
PO=n	Source output options. n Meaning F Full source output file. M Modification file. S Short source output file.
PO	Same as PO=M.
PO omitted	Same as PO=S.
SC	Suppresses header and trailer comments in an output listing/modification file.
SC omitted	Allows header and trailer comments.
SC=0	Same as SC omitted.
SI	Input file in sequenced line format.
SI=0	Input file is standard FORTRAN format.
SI omitted	Input file format determined from columns 1 through 5 of first input line.

Pi	Description
SO=n1/ n2/n3	Sequenced output file where n1 is first sequence number, n2 is increment, and n3 is number of digits in first output sequence number.
SO	Same as SO=10/10/5 unless sequence numbers are determined by format of input file.
SO=0	Unsequenced output files.
SO omitted	Mode of output file determined from mode of input file.

MERGE.p_1,p_2,...,p_n

Initiates Sort/Merge merge capabilities. (Blanks may be used rather than commas.)

p_i	Description

DIALOG=dia
or
DIA=dia
	Invokes interactive dialog between you and Sort/Merge.

dia	Meaning
YES or Y	Dialog invoked.
NO or N	Dialog not invoked (default).

p_i	Description

DIR=lfn
or
DIR=(lfn_1,lfn_2, ...,lfn_n)
	Specifies directive file or files from which parameters are read.

E=lfn
or
E=$NULL
	Specifies file to which diagnostic messages are written.

EL=el	Specifies error level reported.

el	Meaning
T	All trivial and all W, F, and C levels.
W	All warning and all F and C levels.
F	All fatal and all C levels.
C	All catastrophic.

p_i	Description

ENR=expr
or
ENR=expr..expr
	Specifies estimated number of records to be sorted or merged.

FASTIO=fas	Specifies certain input and output records to be read and written directly by Sort/Merge rather than by CYBER Record Manager (CRM).

fas	Meaning
YES or Y	Sort/Merge reads files.

<table>
<tr><th>p_i</th><th>Description</th></tr>
<tr><td></td><td><table>
<tr><th>fas</th><th>Meaning</th></tr>
<tr><td>NO
or N</td><td>Files processed using CRM.</td></tr>
</table></td></tr>
<tr><td>FROM=lfn
or
FROM=(lfn_1, lfn_2,...,lfn_n)
or
FROM=$NULL</td><td>Specifies the input files from which records are read.</td></tr>
<tr><td>KEY=(($value_1$-set_1),..., ($value_n$-set_n))
or
KEY=first..last
or
KEY=first</td><td>Specifies key fields that determine sorted or merged order of output records.

($value_i$-set_i) can be:

(first)
(first,length)
(first,length,type)
(first,length,type,ad)
or
(first..last)
(first..last,type)
(first..last,type,ad)
<table>
<tr><td>first</td><td>First byte or bit of key field.</td></tr>
<tr><td>length</td><td>Number of bytes or bits in key field.</td></tr>
<tr><td>last</td><td>Last byte or bit of key field.</td></tr>
<tr><td>type</td><td>Name of numeric data format or collating sequence.</td></tr>
<tr><td>ad</td><td>Order; A for ascending or D for descending.</td></tr>
</table></td></tr>
<tr><td>L=lfn
or
L=$NULL</td><td>Specifies file to which listing information is written.</td></tr>
<tr><td>LO=lo</td><td>Selects listing options.
<table>
<tr><th>lo</th><th>Meaning</th></tr>
<tr><td>A</td><td>Resource map.</td></tr>
<tr><td>S</td><td>Directive file copied.</td></tr>
</table></td></tr>
</table>

Pi	Description	
	lo	Meaning
	OFF	Nothing written.
	omitted	Same as LO=S.
	(S,A) or (A,S)	A and S used together.
OWNF=lfn	Specifies file that is source of owncode routines.	

OWNFL=integer
or
OFL=integer
	Specifies exact number of characters in all records entering sort from an owncode routine.	

OWNMRL=integer
or
OMRL=integer
	Specifies maximum length in charcters of any record entering sort from an owncode routine.	

OWN$_n$=proc	Specifies name of an owncode routine that is executed each time n is reached.	
	n	1, 2, 3, 4, or 5
	proc	Procedure name.

RETAIN=ret
or
RET=ret
	Directs Sort/Merge to output records with equal sort keys in same order as records are input.	

	ret	Meaning
	YES or Y	Output in same order.
	NO or N	Output not in same order.
SEQx	Defines your own collating sequence.	
	x	Meaning
	N=name	Specifies name of collating sequence.
	S= ('char', ..., 'char')	Specifies collating positions of characters in collating sequence.

Pi	Description	
	x	Meaning
	R=YES or Y	Defines special value step that consists of all characters not explicitly or implicitly specified with SEQS parameters.
	A=YES or Y	Alters output records characters in same value step to first character in SEQS.
STATUS= variable or ST=variable	Specifies that variable be set to value representing hightest level of error that occurred during sort or merge.	
	variable	R1, R2, R3, R1G, EF, or EFG.
SUM=((value$_1$-set$_1$)... (value$_n$-set$_n$))	Specifies the fields to be summed in records with equal key values.	
	value-set	(first,length,type) (first,length, type,rep) or (first..last,type) (first..last,type,rep)
	first	First byte or bit of sum field.
	length	Number of bytes of bits in sum field.
	last	Last byte or bit of sum field.
	type	Name of numeric data format (except REAL).
	rep	Number of fields to be summed; default is 1.
TO=lfn or TO=$NULL	Specifies file to which records are written.	

Pi	Description

VERIFY=ver
or
VER=ver
	Checks merge input records for correct order.

ver	Meaning
Yes or Y	Checks for correct order.
NO or N	No check for correct order.

PLI,p_1,p_2,...,p_n.comments or
PLI. comments

Calls PL/I compiler.

p_i	Description
B=lfn	Binary output on file lfn.
B	Same as B=BIN.
B=0	Output suppressed.
B omitted	Same as B=LGO.
BL	Separable output listing generated.
BL omitted	Listings generated in compact format.
COL= m/n/p	Source text on input file in columns m through n; carriage control character in column p; $1 \le m \le n$, $1 \le n \le 100$, $0 \le p \le 100$, and $p < m$ or $p > n$. If p=0, standard carriage control is applied to source listing.
COL	Same as COL=2/72/1.
COL omitted	Same as COL=1/72/0.
DB	Loadable binary code produced regardless of errors.
DB=B	Same as DB.
DB=0	Loadable binary code produced unless level C or F errors are in compilation.
DB omitted	Same as DB=0.
E=lfn	Error information specified by EL parameter written on file lfn.
E	Same as E=ERRS.
E=0	No error file output generated.
E omitted	Same as E=OUTPUT.

Pi	Description
EL=el	Error level control; errors are listed on files specified by E and L parameters. el — Meaning C — List compiler errors only. F — List fatal errors plus level C errors. I — List informational diagnostics plus level C, F, T, and W errors. T — List trivial errors plus level C, F, and W errors. W — List warning errors plus level C and F errors.
EL	Same as EL=F.
EL omitted	Same as EL=W.
ET=et	Job step aborted if executable code contains errors of the severity specified by et. Order of severity is I, T, W, F, and C with C the highest.
ET	Same as ET=F.
ET=0	Job not aborted despite errors diagnosed during compilation.
ET omitted	Same as ET=0.
GO	Binary object code loaded and executed after compilation.
GO=0	Binary object code not loaded and executed by PLI control statement.
GO omitted	Same as GO=0.
I=lfn	Source input on file lfn.
I	Same as I=COMPILE.
I omitted	Same as I=INPUT.

P_i	Description
INRULE	Uses nonstandard default attributes for arithmetic variables, parameter descriptors, and returns descriptors.
INRULE=0	Uses standard default attributes for all identifiers and descriptors.
INRULE omitted	Same as INRULE=0.
L=lfn	Listable compiler output on file lfn.
L	Same as L=LIST.
L=0	No listable compiler output generated.
L omitted	Same as L=OUTPUT.
LO=lo †	Listing options.

lo	Meaning
A	Complete set of attributes for each identifier.
O	Generated object code.
R	Reference list.
S	Source program without reference to COL parameter.

P_i	Description
LO	Same as LO=A/R/S.
LO=0	No list options selected.
LO omitted	Same as LO=A/S.
PD=n	Print density control for E and L parameter listings.

n	Meaning
6	Single space at six lines per inch.
8	Single space at eight lines per inch.

---

† Multiple options for the LO parameter are separated by slashes (for example, LO=A/R).

p_i	Description
PD	Same as PD=8.
PD omitted	Same as PD=6.
PS=n	Page size is n printable lines per page.
PS omitted	Same as PS=60 if PD=6; same as PS=80 if PD=8.

SORT5.$p_1,p_2,\ldots,p_n$

Calls Sort/Merge Version 5 program. (Blanks may be used rather than commas.)

For parameters and formats refer to MERGE, earlier in this section.

SORTMRG,$p_1,p_2,\ldots,p_n$.

Calls Sort/Merge program.

p_i	Description
nC	Directives in SORT version (n-3) format; n is 6 or 7.
nC omitted	Same as 7C.
I=lfn/r	Sort/Merge directives on file lfn with following rewind options.

r	Meaning
NR	File not rewound before opening.
R	File rewound before opening.

p_i	Description
I	Same as I=COMPILE.
I omitted	Same as I=INPUT.
MO=n	Intermediate merge order; $2 \leq n \leq 64$. If insufficient memory is available, fatal error occurs.
MO omitted	Installation default merge order based on the amount of memory available.
O=lfn/r	Listings on file lfn with same rewind options as for I parameter.
O	Same as O=OUTPUT.
O omitted	Same as O=OUTPUT.
OWN= lfn/r	Owncode binaries on file lfn with same rewind options as for I parameter.
OWN	Same as OWN=LGO.
OWN omitted	Same as OWN=INPUT.

SPECIAL SYSTEM INFORMATION 6

EXCHANGE PACKAGE DUMP

The user can dump his or her exchange package using a DMP, DMB, or DMD statement. Figures 6-1 and 6-2 show actual exchange package dumps. The format of the first dump is produced by CYBER 170 Computer Systems except model 176; CYBER 70 Computer Systems; and 6000 Computer Systems. The second dump format is produced only by the CYBER 170 Model 176 Computer System.

```
   EXCHANGE PACKAGE.

   P           0  A0     200  B0        0      (A0)  0000 0000 0000 0000 0000
   RA     275100  A1       1  B1        1      (A1)  0000 0000 0000 0000 0000
   FL        200  A2      60  B2        2      (A2)  1505 1520 0000 0000 0061
   EM       7007  A3      57  B3    13310      (A3)  0000 0000 0000 0000 0000
   RAE         0  A4       1  B4      201      (A4)  0000 0000 0000 0000 0000
   FLE         0  A5     111  B5      111      (A5)  0000 0000 0061 0004 6000
   MA       1600  A6       1  B6      200      (A6)  0000 0000 0000 0000 0000
                  A7       1  B7    37756      (A7)  0000 0000 0000 0000 0000

   X0     0000 0000 0000 0000 0000
   X1     0000 0000 0000 0000 0000
   X2     1505 1520 0000 0000 0061
   X3     0000 0000 0000 0000 0000
   X4     0000 0000 0000 0000 0000
   X5     0000 0000 0000 0000 0000
   X6     1505 1520 0000 0000 0061
   X7     0000 0000 0000 0000 0000

(RA)      0000 0001 1100 0000 0000
(RA+1)    0000 0000 0000 0000 0000
```

Figure 6-1. Exchange Package Dump

```
   EXCHANGE PACKAGE.

   P         112  A0     200  B0        0      (A0)  0000 0000 0000 0000 0000
   RA     430500  A1       1  B1        1      (A1)  0000 0000 0000 0000 0000
   FL        200  A2      60  B2        2      (A2)  1505 1520 0000 0000 0061
   PSD     60040  A3      57  B3    13310      (A3)  0000 0000 0000 0000 0000
   RAE         0  A4       1  B4      201      (A4)  0000 0000 0000 0000 0000
   FLE         0  A5     111  B5      111      (A5)  0000 0000 0061 0004 6000
   MA       1400  A6       1  B6      200      (A6)  0000 0000 0000 0000 0000
   EEA      1400  A7       1  B7    37756      (A7)  0000 0000 0000 0000 0000

   X0     0000 0000 0000 0000 0000
   X1     0000 0000 0000 0000 0000
   X2     1505 1520 0000 0000 0061
   X3     0000 0000 0000 0000 0000
   X4     0000 0000 0000 0000 0000
   X5     0000 0000 0000 0000 0000
   X6     1505 1520 0000 0000 0061
   X7     0000 0000 0000 0000 0000

(RA)      0001 0001 1200 0000 0000
(RA+1)    0000 0000 0000 0000 0000
```

Figure 6-2. Exchange Package Dump for Model 176

The following are the exchange package fields and their contents.

Label	Contents
P	Program address at which execution stopped.
RA	Reference address; starting address of central memory field length.
FL	Field length in central memory.
EM [†]	Exit mode. Each bit set indicates that if this hardware-detected error occurs, the program aborts. The bit positions are numbered with 0 as the rightmost bit.

Bit Position	Error
11	CM data error.[††]
10	Central memory control (CMC) input error.[††]
9	Extended memroy flag register operation parity error.[††]
8	Central memory copy flag.
7	Reserved.
6	Software flag.
5	Compare/move unit (CMU) interruption flag.
4	Instruction stack purge flag.
4-3	Hardware error exit status bits.[†††]
2	Indefinite operand.
1	Operand out of range.
0	Address out of range.

The EM field in figure 6-1 has bit positions 11, 10, 9, 2, 1, and 0 set.

[†] Does not apply to model 176.

[††] Applies to all CYBER 170 Computer Systems except models 176, 825, 835, and 855.

[†††] Applies to model 74 only.

Label	Contents
PSD †	Program status designator (PSD) register. Each bit set indicates setting of mode flag or error condition. The bit positions are numbered with 0 as rightmost bit.

Bit Position	Error
14	Indefinite mode.
13	Overflow mode.
12	Underflow mode.
11	LCME error.
10	CM error.
9	LCME block range error.
8	CM block range error.
7	LCME direct range error.
6	CM direct range error.
5	Program range error.
4	Not used.
3	Step condition.
2	Indefinite condition.
1	Overflow condition.
0	Underflow condition.

The PSD field in figure 6-2 has bit positions 14, 13, and 12 set.

Label	Contents
RAE	Extended memory reference address; starting address of extended memory field length.
FLE	Extended memory field length.
MA	Monitor address (normal exit address for model 176).
EEA	Error exit address (model 176).
Ai	Contents of address registers.

---

† Applies only to model 176.

Label	Contents
(Ai)	Contents of central memory word addressed by named address register.
Bi	Contents of increment registers.
Xi	Contents of operand registers.
(RA)	Contents of reference address word.
(RA+1)	Contents of request word following the reference address word.

CHARACTER SETS

NOS supports the following character sets.

- CDC graphic 64- (or 63-) character set (table 6-2).
- ASCII 128-character set (tables 6-1 and 6-3).
- ASCII graphic 64- (or 63-) character set (tables 6-1 and 6-2).
- ASCII graphic 95-character set (table 6-2).

Each installation has the option of selecting either the 64-character set or the 63-character set. However, only one can be in effect at any given time. The differences between the 64- and 63-character sets are described under Character Set Anomalies in this section. Any future reference to 64-character set implies either 63- or 64-character set unless otherwise stated.

CODE SETS

NOS supports the following code sets.

- Display code.
- 6/12 display code.
- 12-bit ASCII code.

CHARACTER SET ANOMALIES

The following paragraphs describe anomalies between the 63- and 64-character sets and other problems that may arise in their use.

If an installation is using the 63-character set rather than the 64-character set, two characters are interpreted differently. The colon and the percent for the 64-character set are exactly as shown in the unshaded table entries in this section. If an installation has selected the 63-character set, the character set tables in this section should be modified by deleting the line immediately preceding each shaded line. The characters and codes in the shaded lines reflect the correct table entries for sites using the 63-character set.

When the user is in interactive ASCII mode at a 64-character set site, the colon is translated to 6/12 display code 7404_8 on input, and on output, the occurrence of the 7404_8 code results in the printing of a colon. The 6/12 display code 00 is not defined on input; however, the occurrence of the 6/12 display code 00 on output at a 64-character set site results in the printing of a colon (the colon is always 63_8 on input and output at 63-character set sites).

In either the 63- or the 64-character set, the use of undefined 6/12 display codes in output files may produce unpredictable results and should be avoided.

The use of colons (display code 00) in 64-character set files may cause problems. Refer to Card File Data Conversion in the NOS 2 Reference Set, Volume 3, for further information.

LINE PRINTER USAGE

NOS supports line printers that print files in the character sets corresponding to the indicated print train as follows:

Character Set	Print Train
CDC graphic 64-character set	596-1
ASCII graphic 64-character set	596-5
ASCII graphic 95-character set	596-6

Table 6-1. Interactive Character Sets (Sheet 1 of 4)

ASCII Graphic (64 Char)	ASCII Character (128 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code
: colon†		00†		
Display code 00 is undefined at sites using the 63-character set.				
A	A	01	01	0101
B	B	02	02	0102
C	C	03	03	0103
D	D	04	04	0104
E	E	05	05	0105
F	F	06	06	0106
G	G	07	07	0107
H	H	10	10	0110
I	I	11	11	0111
J	J	12	12	0112
K	K	13	13	0113
L	L	14	14	0114
M	M	15	15	0115
N	N	16	16	0116
O	O	17	17	0117
P	P	20	20	0120
Q	Q	21	21	0121
R	R	22	22	0122
S	S	23	23	0123
T	T	24	24	0124
U	U	25	25	0125
V	V	26	26	0126
W	W	27	27	0127
X	X	30	30	0130
Y	Y	31	31	0131
Z	Z	32	32	0132
0	0	33	33	0060
1	1	34	34	0061
2	2	35	35	0062
3	3	36	36	0063
4	4	37	37	0064
5	5	40	40	0065
6	6	41	41	0066
7	7	42	42	0067
8	8	43	43	0070
9	9	44	44	0071
+	+	45	45	0053
-	-	46	46	0055
*	*	47	47	0052

†The interpretation of this character or code may depend on its context. Refer to Character Set Anomalies elsewhere in this section.

Table 6-1. Interactive Character Sets (Sheet 2 of 4)

ASCII Graphic (64 Char)	ASCII Character (128 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code
/	/	50	50	0057
(	(	51	51	0050
)	)	52	52	0051
$	$	53	53	0044
=	=	54	54	0075
space	space	55	55	0040
, comma	, comma	56	56	0054
. period	. period	57	57	0056
# num. sign	# num. sign	60	60	0043
[l. bracket	[l. bracket	61	61	0133
] r. bracket	] r. bracket	62	62	0135
% †	% †	63†	63†	0045
: colon	: colon	63	63	0072
" quote	" quote	64	64	0042
_ underline	_ underline	65	65	0137
!	!	66	66	0041
& ampersand	& ampersand	67	67	0046
' apostrophe	' apostrophe	70	70	0047
?	?	71	71	0077
<	<	72	72	0074
>	>	73	73	0076
@		74		
\ rev. slant	\ rev. slant	75	75	0134
∧ circumflex		76		
; semicolon	; semicolon	77	77	0073
	@		7401	0100
	∧ circumflex		7402	0136
	: colon †		7404†	0072
	%		7404	0045
	` grave accent		7407	0140
	a		7601	0141
	b		7602	0142
	c		7603	0143
	d		7604	0144
	e		7605	0145
	f		7606	0146
	g		7607	0147

†The interpretation of this character or code may depend on its context. Refer to Character Set Anomalies elsewhere in this section.

ASCII Graphic (64 Char)	ASCII Character (128 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code
	h		7610	0150
	i		7611	0151
	j		7612	0152
	k		7613	0153
	l		7614	0154
	m		7615	0155
	n		7616	0156
	o		7617	0157
	p		7620	0160
	q		7621	0161
	r		7622	0162
	s		7623	0163
	t		7624	0164
	u		7625	0165
	v		7626	0166
	w		7627	0167
	x		7630	0170
	y		7631	0171
	z		7632	0172
	{ left brace		7633	0173
	| vert. line		7634	0174
	} right brace		7635	0175
	~ tilde		7636	0176
	DEL		7637	0177
	NUL		7640	4000
	SOH		7641	0001
	STX		7642	0002
	ETX		7643	0003
	EOT		7644	0004
	ENQ		7645	0005
	ACK		7646	0006
	BEL		7647	0007
	BS		7650	0010
	HT		7651	0011
	LF		7652	0012
	VT		7653	0013
	FF		7654	0014
	CR		7655	0015
	SO		7656	0016
	SI		7657	0017

Table 6-1. Interactive Character Sets (Sheet 4 of 4)

ASCII Graphic (64 Char)	ASCII Character (128 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code
	DLE		7660	0020
	DC1		7661	0021
	DC2		7662	0022
	DC3		7663	0023
	DC4		7664	0024
	NAK		7665	0025
	SYN		7666	0026
	ETB		7667	0027
	CAN		7670	0030
	EM		7671	0031
	SUB		7672	0032
	ESC		7673	0033
	FS		7674	0034
	GS		7675	0035
	RS		7676	0036
	US		7677	0037

Table 6-2. Batch Character Sets (Sheet 1 of 7)

CDC Graphic (64 Char)	ASCII Graphic (64 Char)	ASCII Graphic (95 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code	Punch Code 026	Punch Code 029
: colon†	: colon†		00†			8-2	8-2
Display code 00 is undefined at sites using the 63-character set.							
A	A	A	01	01	0101	12-1	12-1
B	B	B	02	02	0102	12-2	12-2
C	C	C	03	03	0103	12-3	12-3
D	D	D	04	04	0104	12-4	12-4
E	E	E	05	05	0105	12-5	12-5
F	F	F	06	06	0106	12-6	12-6
G	G	G	07	07	0107	12-7	12-7
H	H	H	10	10	0110	12-8	12-8
I	I	I	11	11	0111	12-9	12-9
J	J	J	12	12	0112	11-1	11-1
K	K	K	13	13	0113	11-2	11-2
L	L	L	14	14	0114	11-3	11-3
M	M	M	15	15	0115	11-4	11-4
N	N	N	16	16	0116	11-5	11-5
O	O	O	17	17	0117	11-6	11-6

†The interpretation of this character or code may depend on its context. Refer to Character Set Anomalies elsewhere in this section.

Table 6-2. Batch Character Sets (Sheet 2 of 7)

CDC Graphic (64 Char)	ASCII Graphic (64 Char)	ASCII Graphic (95 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code	Punch Code	
						026	029
P	P	P	20	20	0120	11-7	11-7
Q	Q	Q	21	21	0121	11-8	11-8
R	R	R	22	22	0122	11-9	11-9
S	S	S	23	23	0123	0-2	0-2
T	T	T	24	24	0124	0-3	0-3
U	U	U	25	25	0125	0-4	0-4
V	V	V	26	26	0126	0-5	0-5
W	W	W	27	27	0127	0-6	0-6
X	X	X	30	30	0130	0-7	0-7
Y	Y	Y	31	31	0131	0-8	0-8
Z	Z	Z	32	32	0132	0-9	0-9
0	0	0	33	33	0060	0	0
1	1	1	34	34	0061	1	1
2	2	2	35	35	0062	2	2
3	3	3	36	36	0063	3	3
4	4	4	37	37	0064	4	4

Table 6-2. Batch Character Sets (Sheet 3 of 7)

CDC Graphic (64 Char)	ASCII Graphic (64 Char)	ASCII Graphic (95 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code	Punch Code	
						026	029
5	5	5	40	40	0065	5	5
6	6	6	41	41	0066	6	6
7	7	7	42	42	0067	7	7
8	8	8	43	43	0070	8	8
9	9	9	44	44	0071	9	9
+	+	+	45	45	0053	12	12-8-6
-	-	-	46	46	0055	11	11
*	*	*	47	47	0052	11-8-4	11-8-4
/	/	/	50	50	0057	0-1	0-1
(	(	(	51	51	0050	0-8-4	12-8-5
)	)	)	52	52	0051	12-8-4	11-8-5
$	$	$	53	53	0044	11-8-3	11-8-3
=	=	=	54	54	0075	8-3	8-6
space	space	space	55	55	0040	no punch	no punch
, comma	, comma	, comma	56	56	0054	0-8-3	0-8-3
. period	. period	. period	57	57	0056	12-8-3	12-8-3

Table 6-2. Batch Character Sets (Sheet 4 of 7)

CDC Graphic (64 Char)	ASCII Graphic (64 Char)	ASCII Graphic (95 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code	Punch Code	
						026	029
≡ equiv.	# num. sign	# num. sign	60	60	0043	0-8-6	8-3
[l. bracket	[l. bracket	[l. bracket	61	61	0133	8-7	12-8-2
] r. bracket	] r. bracket	] r. bracket	62	62	0135	0-8-2	11-8-2
% †	% †	% †	63†	63†	0045	8-6	0-8-4
: colon	: colon	: colon	63	63	0072	8-2	8-2
≠	" quote	" quote	64	64	0042	8-4	8-7
↱	_ underline	_ underline	65	65	0137	0-8-5	0-8-5
∨	!	!	66	66	0041	11-0	12-8-7
∧	& ampersand	& ampersand	67	67	0046	0-8-7	12
↑	' apostrophe	' apostrophe	70	70	0047	11-8-5	8-5
↓	?	?	71	71	0077	11-8-6	0-8-7
<	<	<	72	72	0074	12-0	12-8-4
>	>	>	73	73	0076	11-8-7	0-8-6
≤	@		74			8-5	8-4
≥	\ rev. slant	\ rev. slant	75	75	0134	12-8-5	0-8-2
¬	^ circumflex		76			12-8-6	11-8-7
; semicolon	; semicolon	; semicolon	77	77	0073	12-8-7	11-8-6

†The interpretation of this character or code may depend on its context. Refer to Character Set Anomalies elsewhere in this section.

Table 6-2. Batch Character Sets (Sheet 5 of 7)

CDC Graphic (64 Char)	ASCII Graphic (64 Char)	ASCII Graphic (95 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code	Punch Code	
						026	029
		@		7401	0100		
		^ circumflex		7402	0136		
		: colon†		7404†	0072		
		%		7404	0045		
		` grave accent		7407	0140		
		a		7601	0141		
		b		7602	0142		
		c		7603	0143		
		d		7604	0144		
		e		7605	0145		
		f		7606	0146		
		g		7607	0147		

†The interpretation of this character or code may depend on its context. Refer to Character Set Anomalies elsewhere in this section.

Table 6-2. Batch Character Sets (Sheet 6 of 7)

CDC Graphic (64 Char)	ASCII Graphic (64 Char)	ASCII Graphic (95 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code	Punch Code	
						026	029
		h		7610	0150		
		i		7611	0151		
		j		7612	0152		
		k		7613	0153		
		l		7614	0154		
		m		7615	0155		
		n		7616	0156		
		o		7617	0157		
		p		7620	0160		
		q		7621	0161		
		r		7622	0162		
		s		7623	0163		
		t		7624	0164		
		u		7625	0165		
		v		7626	0166		
		w		7627	0167		

Table 6-2. Batch Character Sets (Sheet 7 of 7)

CDC Graphic (64 Char)	ASCII Graphic (64 Char)	ASCII Graphic (95 Char)	Display Code	6/12 Display Code	12-Bit ASCII Code	Punch Code	
						026	029
		x		7630	0170		
		y		7631	0171		
		z		7632	0172		
		{ left brace		7633	0173		
		| vert. line		7634	0174		
		} right brace		7635	0175		
		~ tilde		7636	0176		

Table 6-3. ASCII to 6/12 Display Code Conversion (Sheet 1 of 4)

ASCII Character (128 Char)	12-Bit ASCII Code		6/12 Display Code
	Octal	Hex	
NUL	4000	00	7640
SOH	0001	01	7641
STX	0002	02	7642
ETX	0003	03	7643
EOT	0004	04	7644
ENQ	0005	05	7645
ACK	0006	06	7646
BEL	0007	07	7647
BS	0010	08	7650
HT	0011	09	7651
LF	0012	0A	7652
VT	0013	0B	7653
FF	0014	0C	7654
CR	0015	0D	7655
SO	0016	0E	7656
SI	0017	0F	7657
DLE	0020	10	7660
DC1	0021	11	7661
DC2	0022	12	7662
DC3	0023	13	7663
DC4	0024	14	7664
NAK	0025	15	7665
SYN	0026	16	7666
ETB	0027	17	7667
CAN	0030	18	7670
EM	0031	19	7671
SUB	0032	1A	7672
ESC	0033	1B	7673
FS	0034	1C	7674
GS	0035	1D	7675
RS	0036	1E	7676
US	0037	1F	7677
space	0040	20	55
!	0041	21	66
" quote	0042	22	64
# number sign	0043	23	60
$	0044	24	53
% †	0045	25	63†
%	0045	25	7404
& ampersand	0046	26	67
' apostrophe	0047	27	70

† The interpretation of this character or code may depend on its context. Refer to Character Set Anomalies elsewhere in this section.

Table 6-3. ASCII to 6/12 Display Code Conversion (Sheet 2 of 4)

ASCII Character (128 Char)	12-Bit ASCII Code		6/12 Display Code
	Octal	Hex	
(	0050	28	51
)	0051	29	52
*	0052	2A	47
+	0053	2B	45
, comma	0054	2C	56
-	0055	2D	46
. period	0056	2E	57
/	0057	2F	50
0	0060	30	33
1	0061	31	34
2	0062	32	35
3	0063	33	36
4	0064	34	37
5	0065	35	40
6	0066	36	41
7	0067	37	42
8	0070	38	43
9	0071	39	44
: colon†	0072	3A	7404
: colon	0072	3A	63
; semicolon	0073	3B	77
<	0074	3C	72
=	0075	3D	54
>	0076	3E	73
?	0077	3F	71
@	0100	40	7401
A	0101	41	01
B	0102	42	02
C	0103	43	03
D	0104	44	04
E	0105	45	05
F	0106	46	06
G	0107	47	07
H	0110	48	10
I	0111	49	11
J	0112	4A	12
K	0113	4B	13
L	0114	4C	14
M	0115	4D	15
N	0116	4E	16
O	0117	4F	17

†The interpretation of this character or code may depend on its context. Refer to Character Set Anomalies elsewhere in this section.

Table 6-3. ASCII to 6/12 Display Code Conversion (Sheet 3 of 4)

ASCII Character (128 Char)	12-Bit ASCII Code		6/12 Display Code
	Octal	Hex	
P	0120	50	20
Q	0121	51	21
R	0122	52	22
S	0123	53	23
T	0124	54	24
U	0125	55	25
V	0126	56	26
W	0127	57	27
X	0130	58	30
Y	0131	59	31
Z	0132	5A	32
[left bracket	0133	5B	61
\ reverse slant	0134	5C	75
] right bracket	0135	5D	62
^ circumflex	0136	5E	7402
_ underline	0137	5F	65
` grave accent	0140	60	7407
a	0141	61	7601
b	0142	62	7602
c	0143	63	7603
d	0144	64	7604
e	0145	65	7605
f	0146	66	7606
g	0147	67	7607
h	0150	68	7610
i	0151	69	7611
j	0152	6A	7612
k	0153	6B	7613
l	0154	6C	7614
m	0155	6D	7615
n	0156	6E	7616
o	0157	6F	7617
p	0160	70	7620
q	0161	71	7621
r	0162	72	7622
s	0163	73	7623
t	0164	74	7624
u	0165	75	7625
v	0166	76	7626
w	0167	77	7627

Table 6-3. ASCII to 6/12 Display Code Conversion (Sheet 4 of 4)

ASCII Character (128 Char)	12-Bit ASCII Code		6/12 Display Code
	Octal	Hex	
x	0170	78	7630
y	0171	79	7631
z	0172	7A	7632
{ left brace	0173	7B	7633
| vertical line	0174	7C	7634
} right brace	0175	7D	7635
~ tilde	0176	7E	7636
DEL	0177	7F	7637

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